



VOL. XXIX.

CLEVELAND, O., MARCH 31, 1904.

No. 13.

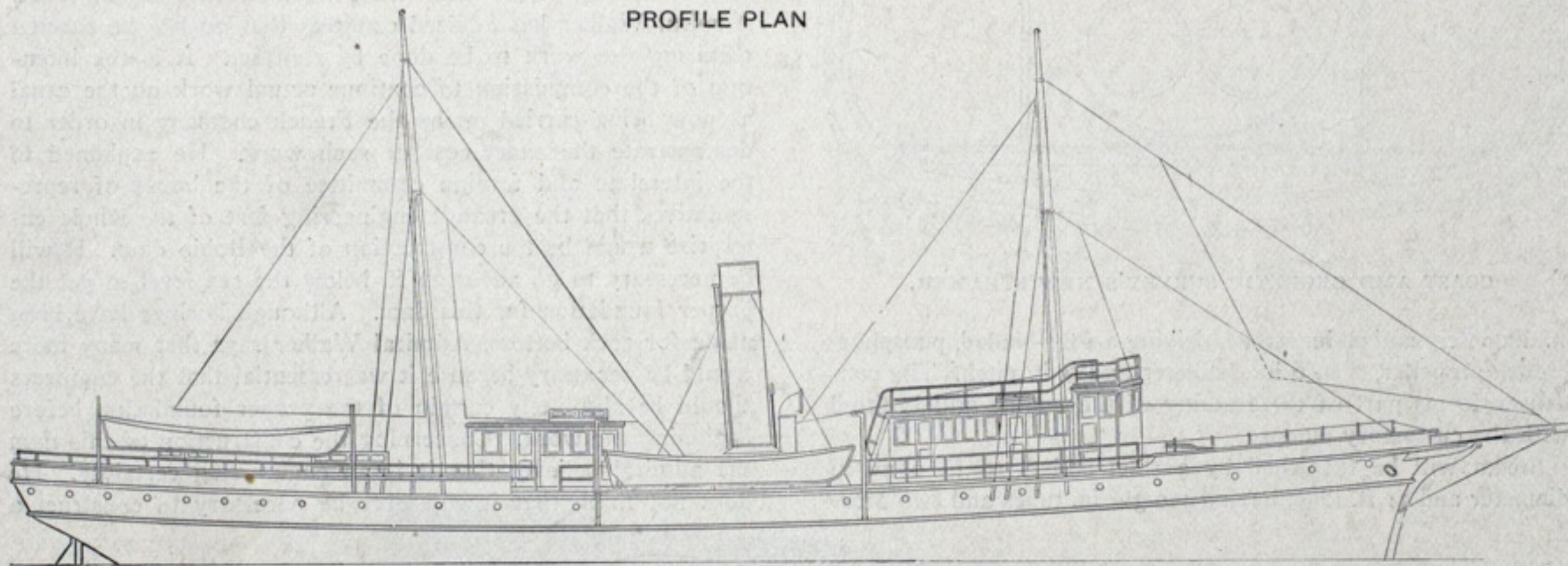
NEW STEAMER FOR THE COAST SURVEY.

Bids were recently opened at the office of the coast and geodetic survey in Washington, D. C., for the construction of a single-screw steamer, under an appropriation passed at the last session of the fifty-seventh congress, Pusey & Jones of Wilmington, Del., being the successful bidders. The vessel is to be used in the prosecution of the work of the survey, and has been designed for the requirements of the duty, especially as regards endurance in coal and stores, rather than for speed.

officers and thirty men. These include lavatories, bathrooms and closets, all of which are connected with a sanitary pumping system. Steam heat and electric lights are provided throughout, and especial attention has been given to the stowing of her surveying outfit and to a well lighted drafting room.

The principal dimensions are as follows: length over all, 147 ft.; length between perpendiculars, 130 ft.; extreme beam, 27 ft.; depth, 14 ft. 6½ in.; displacement on a mean draught

PROFILE PLAN



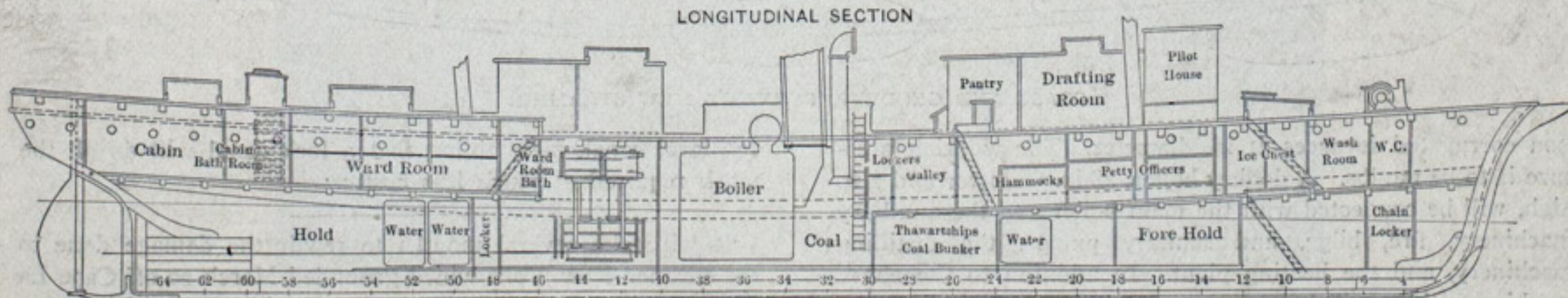
MARINE REVIEW

COAST AND GEODETIC SURVEY'S NEW STEAMER.

She will be schooner-rigged, with two pole masts, the small sail area being intended to steady the ship rather than to add to her speed. The main deck will be flush, with a slightly raised poop, and pipe railing. The number of boats to be carried is five, including a steam launch. Ample quarters have been provided below the main deck for a complement of seven

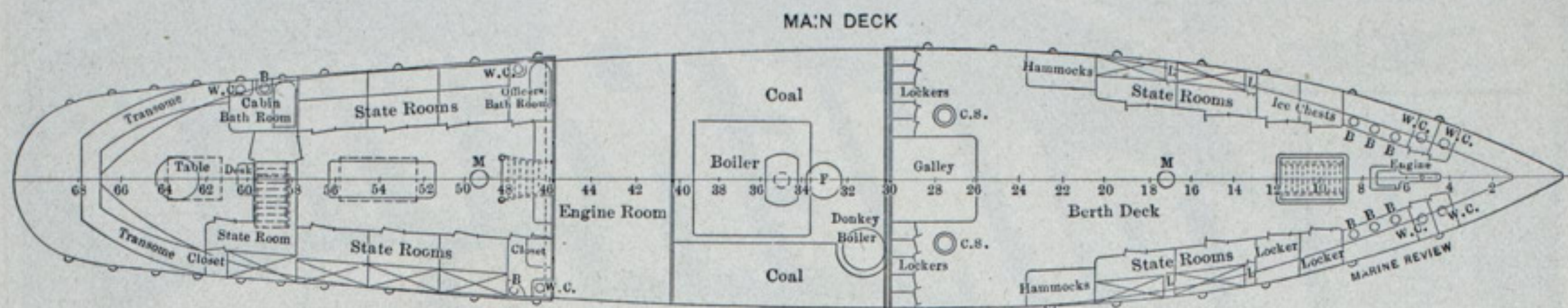
of 8 ft. 7½ in., 450 tons. While the greater portion of the vessel is to be of wood, iron has been used whenever lightness and strength could be gained without defeating the purpose of the wooden hull. The specifications call for a wooden hull, with the exception of the knees, bulkheads, coalbunkers and the casing around the stack on the main deck, which are

LONGITUDINAL SECTION



MARINE REVIEW

COAST AND GEODETIC SURVEY'S NEW STEAMER.



COAST AND GEODETIC SURVEY'S NEW STEAMER.

to be of iron. The keel, main keelson, stem, sternpost, deadwood, frames and breasthooks to be of white oak; the side keelsons, clamps, deckbeams, decks, planking and ceiling to be of yellow pine. All fastenings driven from the outside to be of composition metal; all others of galvanized iron. The hull will be coppered to about one foot above the load water line.

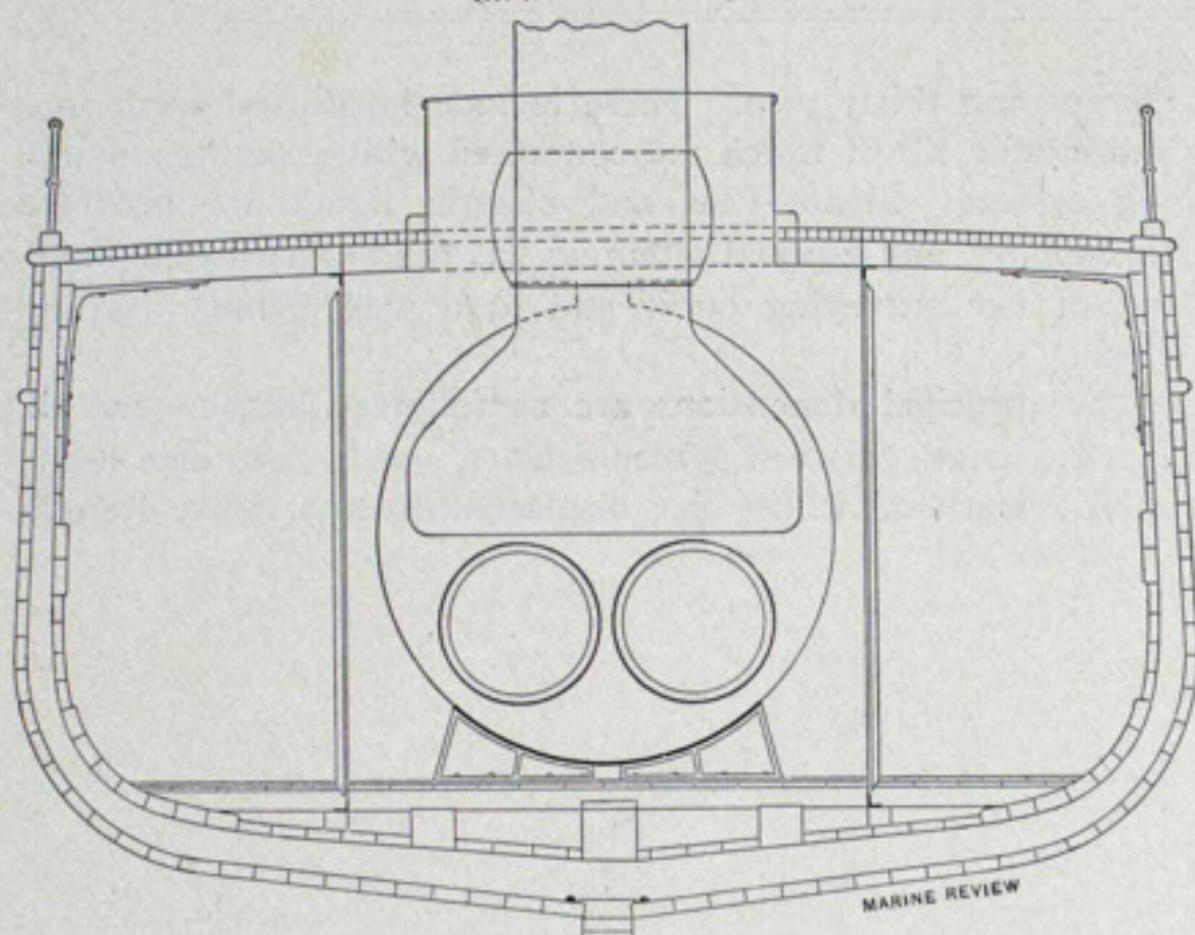
The engines will be of the usual vertical, inverted, direct-acting, fore-and-aft compound type, with cylinders 13 and 26

lighting the ship will operate a 14 in., 20 ampere search light; and a distilling apparatus with a capacity of 1,200 gallons in twenty-four hours.

WORK ON PANAMA CANAL.

Admiral John G. Walker, chairman of the Panama canal commission, announced in Washington last week that actual work on the canal would be begun after the commission has been a few weeks on the isthmus, for which it sailed on Tuesday last. A large number of inspectors will be employed by the commission. Admiral Walker is opposed to the selection of these inspectors through the civil service commission. He is a thorough believer in the civil service, but does not think it would be satisfactory on the Isthmus of Panama. Admiral Walker explains that the estimated cost of the canal made by the last commission did not include the expense of governing the canal's zone. Intense interest is being taken in the construction of the canal by prospective contractors. On the steamer on which the commission is to sail for the isthmus, practically every stateroom has been engaged by agents of contractors who want to look the ground over. Admiral Walker has advised congress that no law be enacted requiring the work to be done by contract. It is the intention of the commission to continue actual work on the canal as now being carried on by the French company in order to demonstrate the exact cost of such work. He explained to the interstate and foreign committee of the house of representatives that the greatest engineering feat of the whole enterprise would be the construction of the Bohio dam. It will be necessary to go about 20 ft. below the sea level to get the proper foundation for this dam. Although borings have been made for rock bottom, Admiral Walker says that many more would be necessary because it was essential that the engineers should be absolutely certain of the proper foundation before beginning the work. Concerning the construction of this dam the admiral believes that it is an engineering certainty. He does not think that it will ever be necessary to construct a

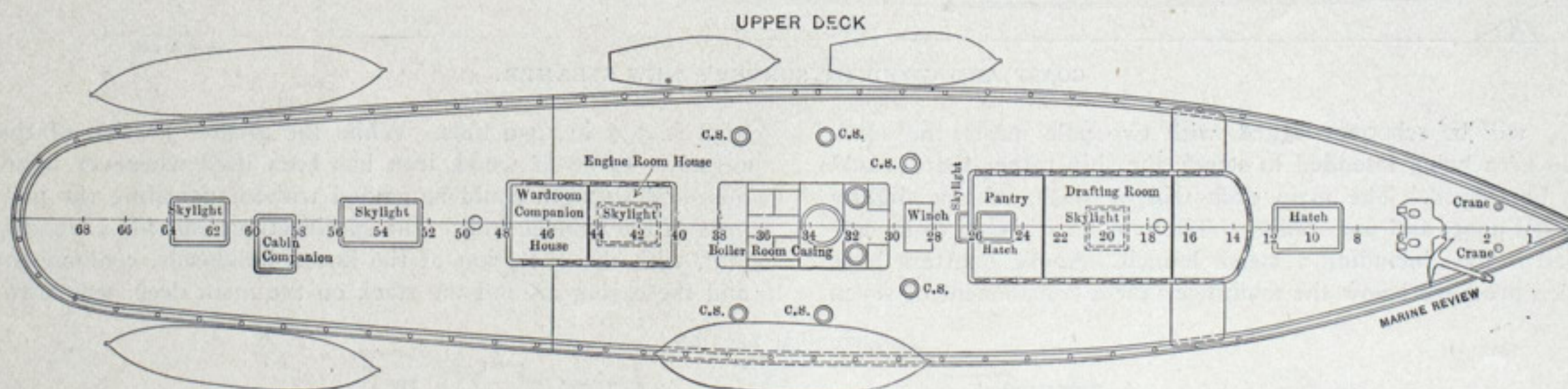
MAIN FRAME.



COAST AND GEODETIC SURVEY'S NEW STEAMER.

in. diameters and 20 in. stroke, driving a four-bladed, phosphor-bronze propeller, 7 ft. 6 in. diameter and 9 ft. pitch. The condenser forms part of the framing of the engine and is fitted with the customary pumps.

Steam will be furnished by a steel boiler, 10 ft. 6 in. in diameter and 11 ft. long, having 160 $3\frac{1}{4}$ in. tubes and two Mor-



COAST AND GEODETIC SURVEY'S NEW STEAMER.

ison corrugated furnaces 41 in. diameter. The working pressure is to be 150 lbs. A donkey boiler, 48 in. diameter and 7 ft. high, will be connected with the main boiler and the auxiliary machinery, fire, bilge, and sanitary pumps, the distilling machinery, and the heating plant. In addition to the above machinery, there will be a steam windlass; a steam winch; an electric generator of $7\frac{1}{2}$ K. W. capacity, which in addition to

sea level canal, maintaining that a lock canal will do all the work required at much less cost.

It will take several months to repair the damage done to the steamer New York which grounded March 20 off Cape La Hague and which afterwards collided with the British troopship Assaye. She was badly damaged.

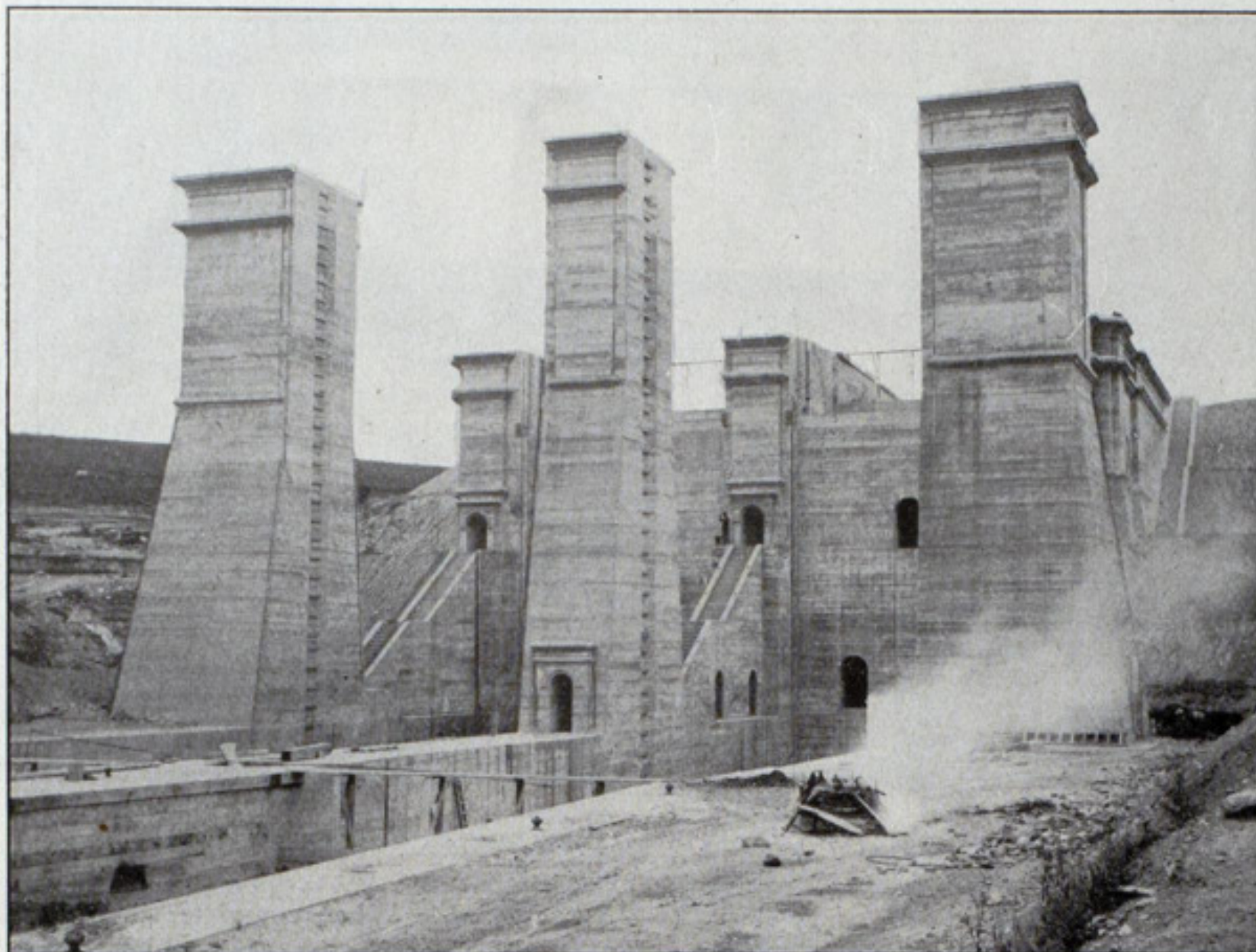
TRENT VALLEY CANAL HYDRAULIC LIFT LOCK.

The Trent Valley canal is the name given to a water route across the Province of Ontario, to connect Georgian bay with Lake Ontario, a portion of which will be open for traffic the coming season.

Though called a canal the term is a misnomer, as in the whole distance of 200 miles there will not be more than fifteen or twenty miles of canal, the remainder being through lakes and river stretches, rendered navigable where necessary by dams and other improvements. Where canaling is required the prism will have a width of 50 ft. on the bottom, with side slopes of two to one in earth, and one-fourth to one in rock.

The general line of the canal was selected by the British government in 1835, and works were commenced in 1837 and carried so far as to make some portions available for local use. Locks have been built since at two points by the Ontario government and the work is now being carried out by the government of Canada. Commencing at Trenton, where the River Trent empties into the Bay of Quinte, an arm of Lake Ontario, the canal follows the Trent to Rice lake, thence up the Otonabee, through Clear, Stony, Lovesick, Deer, Buckhorn, Chemong, Pigeon, Sturgeon, Cameron and Balsam lakes, the latter being the summit, 150 miles from Trenton. From Balsam lake the valley of the Talbot, a small stream, will be followed to Lake Simcoe, thence through Lake Couchiching and down the Severn river to Georgian bay. A branch from Sturgeon lake up the Scugog river and through Lake Scugog reaches Port Perry, 190 miles from Trenton. When the two central divisions, now under construc-

tion, are completed there will be a continuous line of navigation from Heeley's Falls on the Trent to Lake Simcoe, about 160 miles. The Scugog branch has been in use for many years.

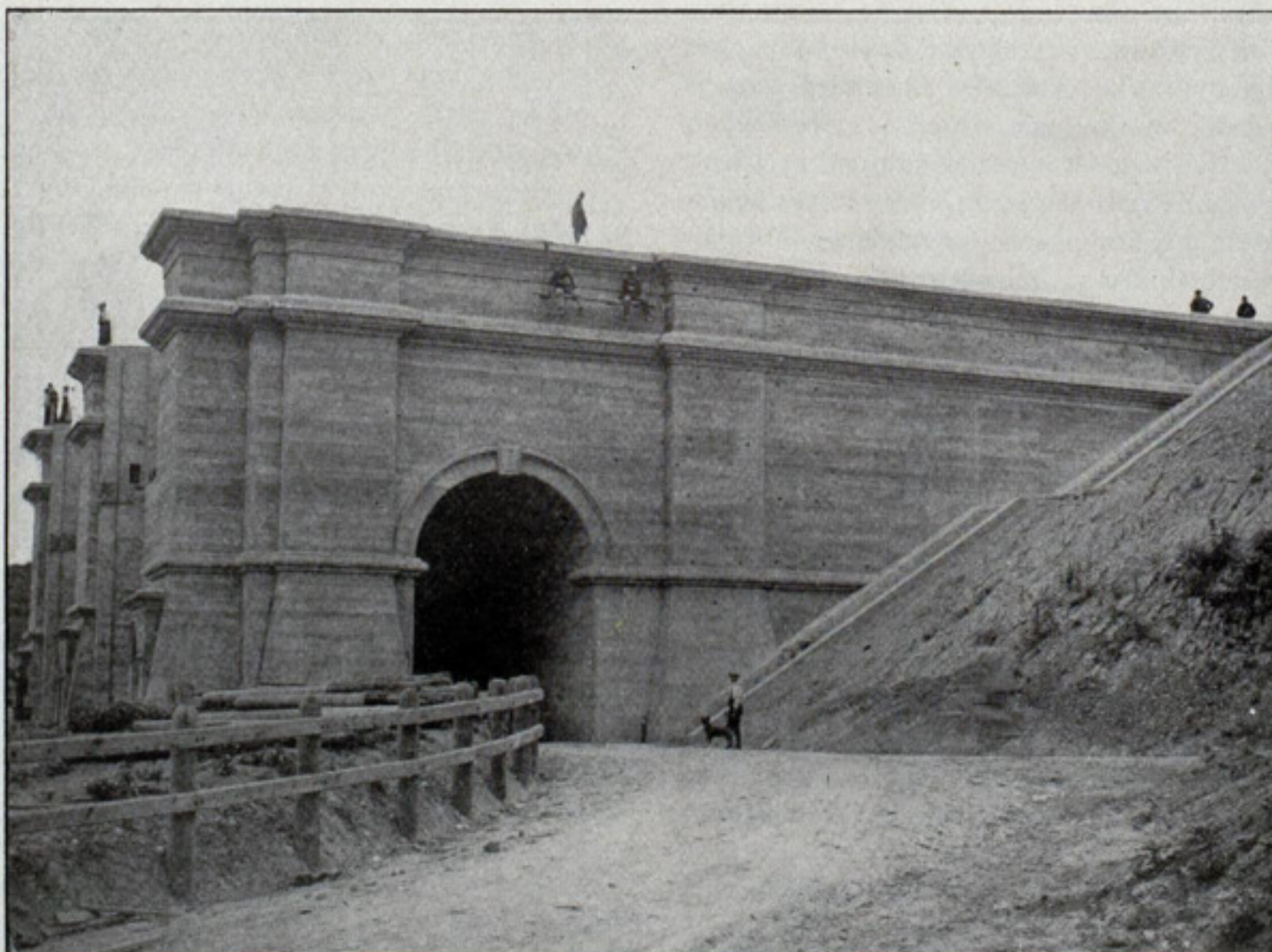


CONCRETE CONSTRUCTION OF HYDRAULIC LIFT LOCK.

4 miles, built to overcome the obstructions to navigation in the River Otonabee, where it passes the town of Peterboro. The total difference in elevation in this section is 77 ft., 65 ft. of which occurs in a distance of 800 ft. Here the hydraulic lock is suitable and the difference in height overcome in one lockage. This lock requires only a few finishing touches in the spring, when it will be ready for use.

The lift lock is theoretically an automatic machine. There

are two water tight steel boxes or chambers, 140 ft. long by 33 ft. wide, with 8 ft. of water in the clear, and closed at the ends by gates hung on the lower edge. The ends of the canal reaches are closed by similar gates. These chambers are carried by means of heavy trusses on top of two rams, 7 ft. 6 in. in diameter, which work in two steel water tight presses, one under each chamber. The presses are connected by a pipe 12 in. in diameter, in the center of which is placed a valve to control the passage



HYDRAULIC LIFT LOCK, TRENT VALLEY CANAL, SHOWING ROADWAY.

of water between them. The junction between the ends of the chambers and the canal reaches is made water tight by means of a rubber hose capable of inflation by an air compressor.

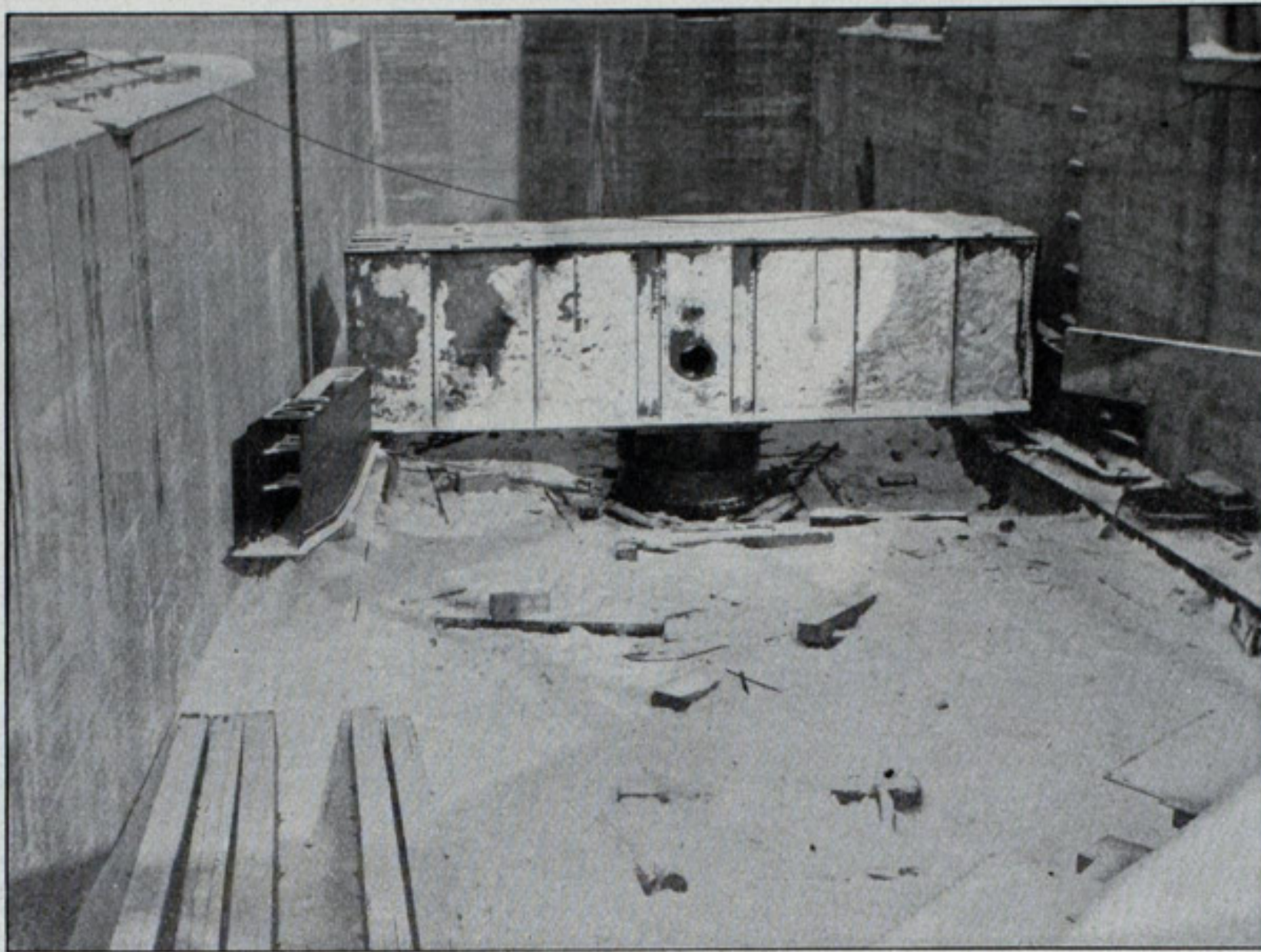
The mode of operating the lock is as follows: Suppose both chambers to be at a standstill, one up and the other down, both gates towards the reach open ready for a vessel to enter. The bottom of the upper chamber will be 10 in. lower than the bottom of the canal and will have 8 ft. 10 in. of water on the

sill. The bottom of the lower chamber will be level with the bottom of the canal and will have 8 ft. of water. The upper will therefore be heavier than the lower by approximately 100 tons. A vessel entering does not affect this condition, for by a well known law it displaces an amount of water equal to its own weight, loaded or unloaded. The valve in the connecting pipe between the two presses is closed. The gates being closed the operator opens the valve, and the upper chamber descends by its extra weight, forcing the water into the other press, which causes the other chamber to ascend till the two chambers have exchanged positions. The surface of the water in the lower chamber will now be 10 in. above that in the lower reach, and the surface of the water in the upper chamber 10 in. below that in the upper reach. Valves are opened and the water finds its own level. The gates are then opened and the vessel passes out. Vessels are hauled into and out of the chambers by hydraulic capstans. A guard gate is placed on the upstream side of the lock, which is closed when a lockage is being effected so as to guard against accident. The water passes back and forth between the presses when the lock is being operated, any leakage being made good by an accumulator. Power for opening and closing the gates, working the pumps, operating the air compressor for inflating the hose which makes the water tight seals around the gates, and the dynamo for lighting, is furnished by turbines.

The substructure and walls of the lock, as well as the dams, bridge piers and other works along the canal are built of concrete, of which there are 25,000 cu. yds. in the lock illustrated. When completed the canal will have two other similar locks, one of 53 ft. and one of 50 ft. lift.

Hydraulic lift locks are valuable as making it possible to carry canals over heights where water is scarce. They effect also a great saving in time. In the Trent Valley lock the time required to raise or lower the chambers is only three minutes, and vessels can be locked through in from twelve to fifteen minutes, while with the ordinary lock an hour would be considered fast work.

The lock described is the only hydraulic lock in America and the largest in the world. The only other similar works in existence are: one at Anderton, England, which connects the Trent and Mersey canal with chamber 147x16 ft, depth 6½ ft, which lifts 80 ton boats; one at Les Fontinettes, France, on



HYDRAULIC LIFT LOCK, TOP OF DAM UNDER CONSTRUCTION.

the Neuffossi canal, with chamber 130x19 ft, depth 7 ft., which lifts 300-ton boats; one at La Louviere, on the Canal du Centre, Belgium, hitherto the largest, with chamber 141x19 ft., depth 8 ft., which lifts 400-ton boats. All of these have a lift of about 50 ft.

The Trent Valley route is about 250 miles shorter than the Welland route between Sault Ste. Marie and Montreal, and according to Mr. Rogers, chief engineer of the work, it will reduce the rate on bulk freight, such as grain, coal and iron, by at least

two-thirds. When complete, bulk will be broken at Midland on the Georgian bay, where the large lake vessels will discharge into barges, which will be towed in lines of from two to six through the canal and down the St. Lawrence to ocean vessels at Montreal.

The amount expended on the canal to date is \$3,825,837. The total estimated cost is \$6,960,000.

BREAKING UP THE VICTORIA AND ALBERT.

After a long and useful career, the late Queen Victoria's yacht Victoria and Albert has come to the hands of the ship-breakers. Her machinery, masts and rigging are being lifted out, after which she will be placed in the dock and broken up. A few relics will be saved by order of the king, and the remainder of the vessel will then be burnt. A strict watch is being kept to see that pieces of the vessel are not carried off by curio hunters. The old yacht is nearly sixty years of age, for she was built in 1845 at Pembroke dock yard, her engines and boilers being supplied by the well-known firm of John Penn & Son. She was practically reconstructed in 1872, and as the result of frequent overhauls, there is probably not much of the original vessel left; defective parts were constantly being taken out and replaced by new material. She has had three sets of new boilers, and in 1872 her engines were taken out, thoroughly overhauled, and new cylinders supplied. Old as she was, the old Victoria and Albert was a comfortable vessel, and a good sea boat. She was full of tender memories for the late queen, who consistently refused to tolerate any alterations that destroyed any of the links with the memory of her husband. The floral tapestry with which all the royal apartments were hung was designed by Prince Albert, and was retained to the last, despite its old-fashioned and, to modern taste, inartistic pattern. It was only with the greatest reluctance that Queen Victoria consented to replace the old yacht by a new one.

Prof. W. H. Burr, member of the Isthmian canal commission, told the house committee on interstate and foreign commerce this week that in his judgment the cost of construction of the Panama canal would be approximately \$144,000,000. He thinks that it ought to be completed within eight years.

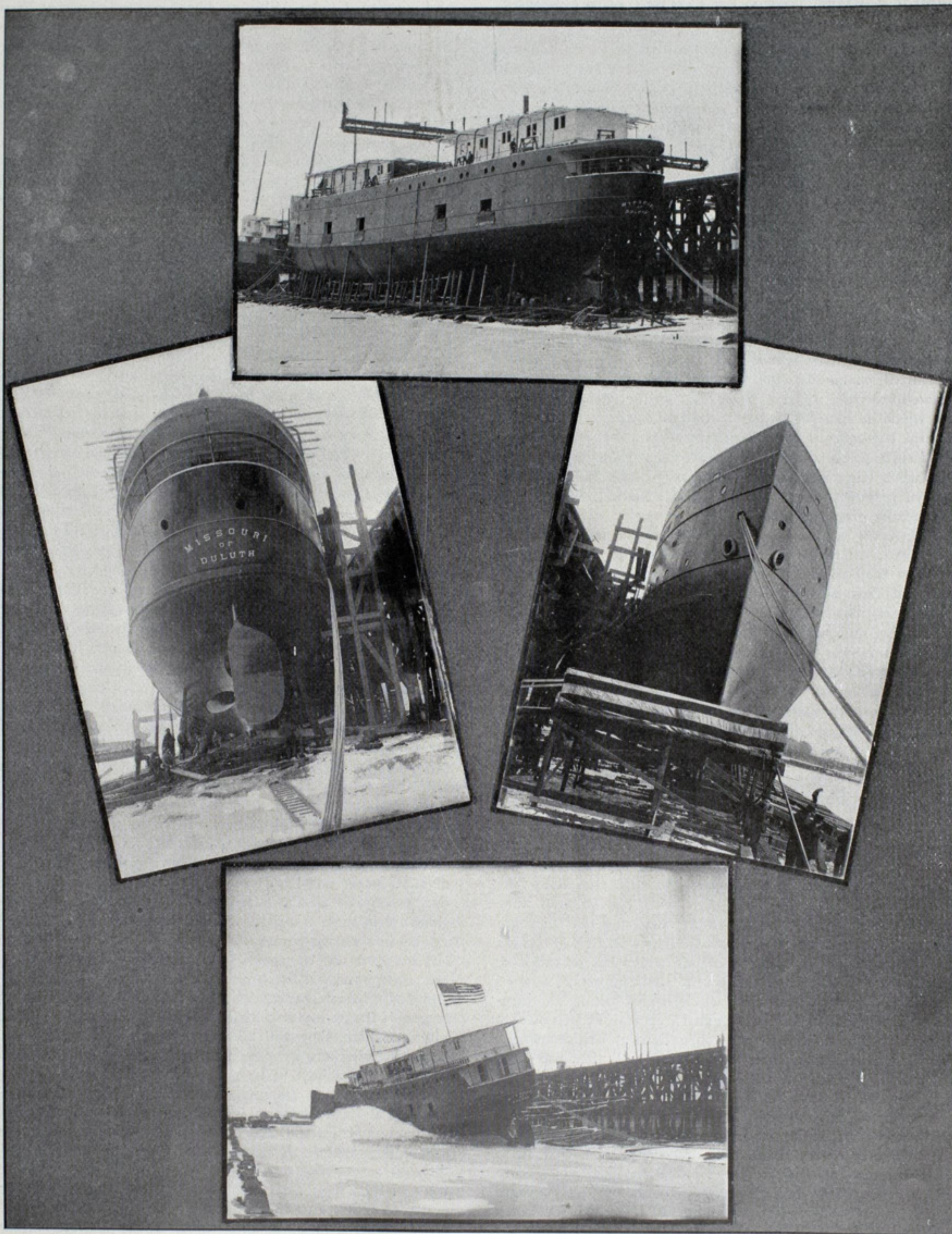
NEWLY FORMED UNION OF SAILING SHIP OWNERS.

By an Occasional Correspondent.

During the early part of January, word reached this side of the Atlantic that an international union of owners of sailing ships had been formed in Europe, the object being to ameliorate the deplorable condition in which sailing-ship owning is at present. This projected union is a remarkable evolution in the history of merchant shipping. It occurs during one of the most depressed periods known in the entire history of European shipping, and it expresses an alliance between Great Britain and the largest bounty-giver in existence (France) at a time when retaliation against all bounties and subsidies is being advocated by some British statesmen. If any one special cause can be indicated for the great decline in freights from Europe to the rest of the world—at all events, in sailing ship freights—it is the subsidy system of the French government. Under this system a French sailing ship can be “run” on the long voyage charters to the Pacific coast of the United States and to Australia at rates which leave a decided loss to any non-subsidized competitor, but on which the French owner is supposed to make a profit as the result of the navigation bounties which he receives on the completion of the voyage. As a natural consequence, the French bounties have overweighted the freight market, because a French ship cannot earn a subsidy while lying idle in port, but must be kept sailing at any rate of remuneration in order to earn a bonus. The strange part of the proposed union is that the owners of the bounty-fed ships, which have so seriously injured the freight market, are now combining with the non-bounty-fed owners—most of them Englishmen or Scotchmen—whose business they have impaired in an attempt to restore the freight rates for sailing ships to normal conditions. And they have induced the German sailing ship owners to join the scheme, which is, of course, what on this side of the Atlantic is known as a “trust.” The movement had its origin in a proposal made by Mr. Leyland of Liverpool to the sailing ship owners of Liverpool and Glasgow for an arrangement to lay up all disengaged tonnage for a period of three or six months. The proposal was adversely criticised by some interested and well-qualified authorities on the ground that Mr. Leyland, having some vessels under the French flag, was desirous of restricting the supply of British ships, in order to give bounty-fed French tonnage a wider scope. But when the French ship owners took up the matter, and asked for an international conference of sailing ship owners to be held in Paris, it was perceived that this personal objection could not be sustained. At this conference the French owners asserted that even with the bounties they cannot now earn a profit at current rates, and that they are most anxious to come to an understanding with British owners for putting an end to the rate-cutting which has prevailed so extensively. The primary object of the conference was, of course, to find some plan which would benefit sailing ship owners generally, and a point was gained when the French owners agreed to come under the same obligations as British owners, provided the German owners also agreed, and, after two days’ discussion, a series of resolutions of an unusual character was passed. It was resolved that an international sailing ship owners’ union should be formed through the existing ship owners’ associations and protective clubs. It was declared that “the only object of the union, for the present, shall be to fix minimum rates of freight for the principal voyages in which sailing ships engage, excepting only outward voyages from the United Kingdom or continent of Europe, for which no rates of freight shall be arranged, each vessel being left free to make the best terms she can. And, in order to carry out this object, it was decided to form a committee of five representatives from Great Britain, three from France, and three from Germany, who “shall, from time to time, fix the minimum rates of freight from the various loading ports, as they judge best in their absolute discretion.” The committee appointed consists of R. W. Leyland and John Herron, both

of Liverpool, George Milne of Aberdeen, and Andrew Weir and J. A. Roxburgh, both of Glasgow, representing Great Britain; F. L. S. Sloman and F. W. Dahlstron of Hamburg, and George Platte of Bremen, representing Germany; Eugene Peregrine of Nantes, Eugene Salles of Marseilles and M. G. Guenguier of Paris, representing France. It was resolved that “such owners as agree to join this union shall bind themselves not to accept for the ships which they control less than the minimum rate appointed by the international committee for any voyage for which the committee shall have fixed a rate of freight, and for all such voyages the various owners are prohibited from chartering, except on the recognized terms of charter for the particular trade, and without any extra commissions, rebates or back letters;” but it was also agreed that “the owners of French ships shall be allowed to reimburse the charterers the net cost or any extra insurance the latter may have to pay on the cargo owing to the ship being French-owned.” (In the absence of some explanation this appears to be a sort of international recognition of the defective character of French ships or seamanship or both. It is almost certain, however, that British ships, as far as insurance rates are concerned, receive some kind of preferential treatment at Lloyds.) Another resolution was to the effect that, “should the minimum rate of freight not be obtainable, the vessel shall be laid up until such a rate can be got, or, in the opinion of the owner, they have liberty to leave the port in ballast.” (Although the grammar of this resolution is defective, its meaning is clear). It was agreed that only ships of 1,000 tons net register and upwards can be enrolled in the union, and certain regulations as to membership were decided upon.

It will be seen that this is an understanding to fix minimum freights for the voyages to Europe only of sailing vessels belonging to the three nations represented at the conference. For outward freights owners are to have a free hand, which may be wise in view of the competition of steamers in the ports of England, France and Germany; but this arrangement suggests the comment that, in respect of charters from Europe to French colonies, French ships are likely to have the preference at the same freight rates, because goods imported to these colonies in French bottoms receive a rebate on the custom duties. An agreement such as that contained in the Paris resolutions can never be compulsory, nor can it be certain that all the ship owners concerned will adopt it voluntarily. The various clubs and associations have no power, as commercial organizations over their members, and each individual owner will have to enter the union direct. Nevertheless, practically all the owners of the larger class of sailing ships are in these associations and can be reached, and all the vessels in the long-voyage trades which it is desired to regulate are over one thousand tons. The latest reference books are not at hand, but there are at least 800 British, 215 French, and 225 German sailing ships of the prescribed size. Of course, if the executive committee decides to fix the homeward rates too high, they will allow the steamships to get all the business; but there is some protection against the grievances so much complained of by some owners concerning rates in special trades. The minimum freight charges will probably be adjusted at frequent intervals, and with some consideration as to supply and demand, and not for long periods of time, otherwise they will be inoperative and decidedly injurious. It must be assumed that the ship owners of all three countries want to keep their ships employed, and that they will always prefer to accept any offer of employment that will cover expenses rather than lay up their ships. What this international agreement ought to accomplish is to prevent French sailing vessels from accepting freights which leave a loss on expenses, in order to earn the bounties which they cannot claim except for an outward and homeward voyage. It should be noted that a French vessel is not required to carry a full cargo for the whole distance on which the navigation bounty per nautical mile is payable. For example, sailing from Melbourne (Aus-



LAUNCH OF THE MISSOURI AT THE YARD OF THE CHICAGO SHIP BUILDING CO , SOUTH CHICAGO, ILL.

tralia) to San Francisco, a ship need only carry cargo—for some very trifling payment, if her owner chooses—to any port one-third of the distance, and make the remainder of the voyage in ballast, in order to be entitled to the full boun-

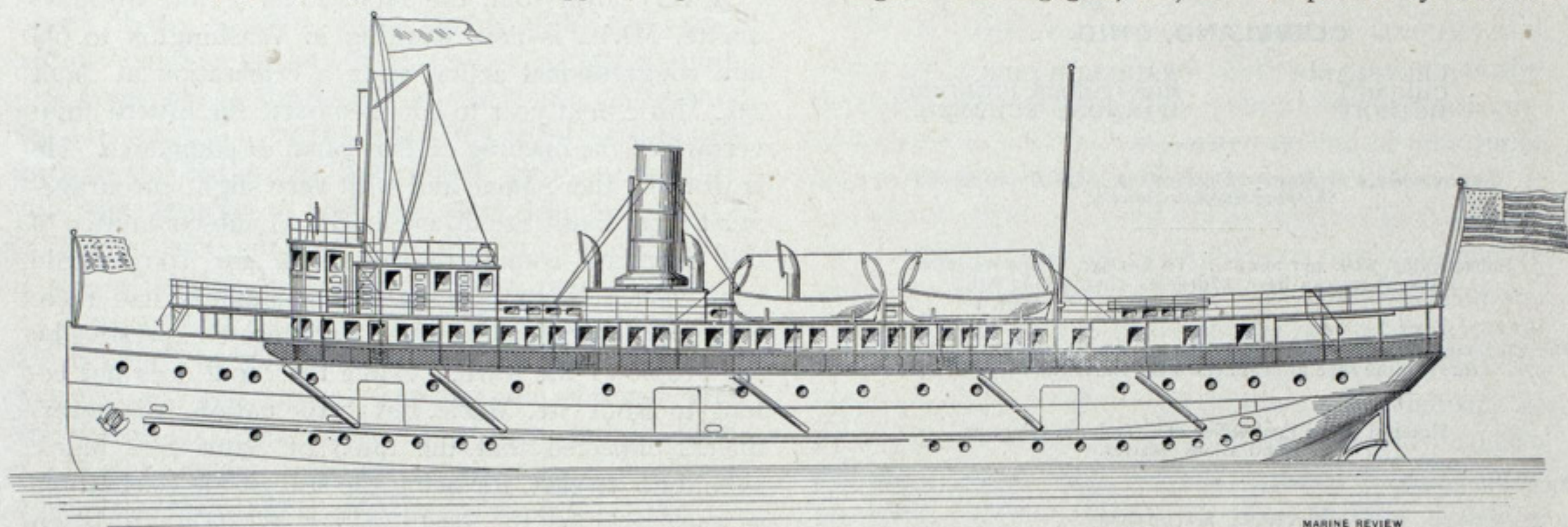
ty for the whole distance from Australia to San Francisco.

The French ship owners assert that the bounties do not enable them to make a profit. They lose in the delays and ex-

penses connected with procuring outward cargoes, in the higher cost of their ships as compared with British-built ships, and in the higher rates of insurance they are compelled to pay. On the other hand, all the bounties allowed for ship building under the French law of 1902 have been applied for, and there being no money to be obtained from the government no more orders for ships are being given, and the ship building industry is threatened with paralysis, to the dismay of the minister of marine affairs. It is not at all improbable, however, that a further large sum may be voted by the chamber of deputies. The British owners seem to have accomplished a good deal in inducing their French brethren to abstain from trading for the sake of the bounties alone, and it is also of importance that the chief ship-owning firms of Hamburg, a port of quite the first rank, have already joined the international union. If this union were in restraint of trade it would be undesirable, however much sympathy might be due to struggling ship own-

ing athwartship will be the lunch counter. The floors of the social hall will be rubber tiled and walls paneled in dark mahogany. Two stairways will lead to the main saloon, one from the social hall and one from the main deck forward.

With but eight staterooms located in the after cabin the main saloon will be very roomy and as the walls forming the cabin sides will be fitted with drop windows all the way around it is expected that the main saloon will present a very pleasing and attractive appearance. The cabin will be finished in mahogany and handsomely finished. The passageways around cabin will be extra large (5 ft.) so as to permit passengers moving back and forth with ease. The ship's officers will be housed on the hurricane deck. Aft of the pilot house and extending the entire width will be the captain's quarters and chart room. Aft of the chart room will be the quarters for mates, wheelmen and lookouts and also two parlors for passengers. Steering gear, etc., will be operated by steam and



PROFILE OF THE INDIANAPOLIS.

ers. But it is not in the public interest that any great national industry should be conducted at a loss—this is the real reason why American vessels, both steamers and sailing ships, ought to be subsidized. Great Britain, far more than any other nation, depends upon her mercantile marine for her existence, and the ruin of even her sailing ship owners means much more than the mere bankruptcy of a few individuals or corporations. The cheapening of commodities by the reduction of the rate of transportation below its economic cost is not for the general good of the inhabitants of any country. The International Union of Sailing Ship Owners is a new departure in the history of merchant shipping, and although there is much to commend it, its success is by no means certain. In any event a study of the French laws which are responsible for its formation may enable congress to pass a shipping bill which will contain none of the numerous flaws embodied in foreign shipping statutes.

NEW STEAMER INDIANAPOLIS.

The steamer Indianapolis, designed and being built by the Craig Ship Building Co., Toledo, for the Indiana Transportation Co., to run between Michigan City and Chicago will be 186 ft. long, 32 ft. beam and 12 ft. moulded depth. She will be supplied with triple-expansion condensing engines developing approximately 2,000 H. P. With a speed of 20 miles an hour it is expected she will make the trip between Michigan City and Chicago in about two hours. Two large Scotch boilers, provided with the latest devices, will supply the powerful engines with steam. There will be one large smokestack common to the two boilers. Two dynamos will supply current for electric lights and 4,000 candle power searchlight. Below decks aft will be galley and crews' dining rooms. Forward of engines will be the buffet. In the fore peak will be crews' quarters. The passenger entrance to the social hall will be on main deck. Facing the social hall will be the offices of the purser, steward and the baggage check rooms. Extend-

the fittings and furnishings throughout will be first-class. The launch of the steamer will take place the latter part of April and the Indianapolis will go into commission about June 1.

PACIFIC COAST SHIP YARD NOTES.

The recent storm on the Pacific coast has sent a number of vessels to the ship yards for repairs. The steamer George Curtis, which was damaged during the heavy weather, will have her jiggermast removed and will be converted into a bark at the yard of Wm. A. Boole & Son, Oakland. The Risdon Iron Works are repairing the British bark Olivebank and the barkentine Coronado. At the Fulton Iron Works of San Francisco the steamers G. H. Kruger and Greenwood have just been overhauled. The steamer F. A. Kilburn will have all her machinery installed and will be ready for service inside of three weeks. The steamer Francis H. Leggett will have an air compressor plant added to her equipment.

At the yard of Joseph Supple, Portland, Ore., work is progressing on the two government dredges and the new stern-wheel steamer being built. The steamer Dalles City will be launched in a few days and the steamer George W. Simon will be launched as soon as her machinery is ready to be installed.

The cruiser California, building at the yard of the Union Iron Works, San Francisco, Cal., will be ready for launching by the end of April. The new steamer Like-Like just completed at this yard will sail for Honolulu next week.

At the White ship yard, Everett, Wash., the schooner Ensign is rapidly nearing completion. The hull is entirely ceiled and part of the deck frame is in. The vessel will be launched the last of May.

At McWhinney's yard, Aberdeen, Wash., the new stern-wheel steamer Skookum was recently launched. She is 120 ft. long and will cost complete \$30,000.



DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED
OR ASSOCIATED WITH MARINE MATTERS
ON THE FACE OF THE EARTH.

Published every Thursday by

The Penton Publishing Company,
CLEVELAND, OHIO.

CLEVELAND:	WADE BUILDING.
CHICAGO:	MONADNOCK BUILDING.
DETROIT:	HAMMOND BUILDING.

*Correspondence on Marine Engineering, Ship Building and
Shipping Subjects Solicited.*

Subscription, \$3.00 per annum. To Foreign Countries, \$4.50.
Subscribers can have addresses changed at will.

The Cleveland News Co. will supply the trade with the MARINE REVIEW
through the regular channels of the American News Co.

Entered at the Post Office at Cleveland, Ohio, as
Second Class Matter.

MARCH 31, 1904.

The next issue of the Review will contain a full report of the meeting of lake interests before the committee on rivers and harbors of the house of representatives to extend the deep water navigation of the great lakes around the rapids at the head of Niagara river by means of a ship canal. This improvement will have a direct bearing upon the utility of the enlarged Erie canal and is greatly to be desired. It can be obtained at an expenditure of about \$4,000,000, whereas the state of New York alone intends to expend \$101,000,000 in the enlargement of the Erie canal. A most influential delegation from the great lakes appeared before the committee and many arguments were advanced in favor of the improvement. The most distinguished person present was President James J. Hill of the Great Northern Railway, who made a most forceful argument in favor of deep draught. He said that the clock struck twelve for the Mississippi river a great many years ago, because he maintained that with light draught it is possible for railways to successfully compete with waterways. Deep waterways are, however, quite another thing, and form the cheapest mode of transportation known. The proposition briefly is to build a ship canal around Squaw island in the Niagara river in order to utilize the magnificent water front below the rapids for the relief of the present congestion of freight traffic. The foot of Lake Erie is the great terminus for a considerable portion of the lake freight and the present harbor facilities there are steadily growing more and more inadequate.

President Livingstone of the Lake Carriers' Association and Mr. Harvey D. Goulder, counsel for the Lake Carriers' Association, made very powerful pleas. Others who spoke were Gen. Francis V. Greene, Attorney General Cunneen, William A. Rogers, William H. Gratwick, George P. Sawyer and F. Howard Mason of Buffalo; John G. Milburn of New York, George A. Tomlinson of Duluth, State Engineer Edward A. Bond of Albany, Col. Thomas W. Symons, government engineer; Representative Ryan and many others. A complete report of this meeting, illustrated with charts and maps, will be found in the next issue of the Marine Review.

A very loyal soul, the Hon. Peter White of Marquette, Mich., is now working in Washington to obtain congressional action upon a celebration at Sault Ste. Marie next year to commemorate the fiftieth anniversary of the opening of that canal of commerce. He is working there alone and with very slight encouragement from Sault Ste. Marie itself. A sub-committee of the interstate commerce committee for 1903 would have visited Sault Ste Marie last summer had there been any invitation extended or interest expressed by the people of the town. While the canal does not belong to Sault Ste. Marie, but to the nation, it is nevertheless expected that the town of Sault Ste. Marie should do its part, for being the seat of the celebration, it must also be the host. Peter White's efforts on behalf of this celebration have been indefatigable, and he has tramped the corridors between the senate and house for several days. He has also called upon the British ambassador and solicited the co-operation of Great Britain and the Dominion of Canada. Senator Alger has introduced a resolution in the senate to appropriate \$25,000 for a proper observance of the anniversary, and has pledged its passage in December next. No effort will be made to pass it at the present session, owing to the general opposition to appropriations during presidential years. Senator Alger has, however, promised to put it through the senate at the beginning of the next session, and Congressman Young will put it through the house. It remains, therefore, for all the interests concerned with great lakes trade to lend their efforts towards the fulfillment of these promises. The reasons why the celebration should be held are very well expressed in Senator Alger's joint resolution, as follows:

"Whereas, the legislature of the state of Michigan has by concurrent resolution approved Feb. 12, 1903, memorialized congress to take measures to cause the first semi-centennial period of the ship canal at the entrance of Lake Superior to be suitably recognized as marking an epoch in national commercial development, especially in the region bordering on the great lakes; and

"Whereas, that public work, originally built under supervision of state authority, but subsequently transferred to national control, has taken the foremost rank in the artificial waterways of the world in lock dimen-

sions and in traffic tonnage, adding immensely to the national wealth and largely enabling the United States to become an exporter of iron and steel manufactures by improved access to the vast iron deposits in the states of Michigan, Wisconsin, and Minnesota; and

"Whereas, the Great Lakes Sault Canal Semi-Centennial Association has recommended that July 12, 1905, be named as the day when public ceremonies at the canal shall be observed, the full period of fifty years of utilization of the same being completed with the advent of that month; therefore,

"Resolved, by the senate and house of representatives of the United States of America in congress assembled, that a special congressional commission, to consist of five senators, to be appointed by the president pro tempore of the senate, and ten representatives, to be appointed by the speaker of the house, be authorized to represent congress upon the before-mentioned occasion and at the date last named, and in connection with said association and any state commission appointed for such purpose, to arrange for suitable ceremonies to take place upon the national reserve adjoining said canal at the time hereinbefore mentioned, the said commission to become organized by selecting a chairman and appointing a marshal and secretary, and with power to direct action by written authorization of members during intervals of meetings, a majority to form a quorum for transaction of business.

"That the secretary of commerce and labor be authorized and directed to cause a monolith, with suitable ornamentation and accessories, on plans approved by the congressional commission, to be erected upon said canal reserve, to receive memorial tablets relating to the officials in the original construction corporation; also to state officials in the canal administration; also to the engineers and other active agents of the United States during the later period of its management; also one relating to official participants in the ceremonies of the first half-century celebration; the total expense to be limited to the sum of \$10,000 for such monolith and tablets, \$10,000 for the preparation of a historical and statistical volume relating to the canal, and \$5,000 for the expenses of the congressional commission, to be paid upon presentation of its warrants therefor upon the secretary of the treasury."

It is significant that the Lake Carriers' Association has seen fit to protest to Secretary of War Taft against the use of government dredges in the improvement of the waterways of the great lakes, as an infringement upon the rights of private interests. The protest is especially directed against the construction of a government dredge for Lake Michigan. The secretary of war was authorized to divert money appropriated for the improvement of the harbors of Lake Erie for the construction of a government dredge for use on Lake Erie, but no such provision was made for the construction of a dredge for Lake Michigan. However, when the contract was let for the dredge for Lake Erie one

was also let for Lake Michigan, very much to everyone's surprise. The government dredges are intended to do work which rightfully belongs to individuals. Millions of dollars have been invested in dredges along the chain of great lakes and it is not fair to this capital to deprive it of a fair part of its possible field. Moreover, statistics prove that government dredging is extravagant business. It costs more per cubic yard than private dredging, and, of course, the people have to bear this added burden. The Lake Carriers' Association is a very influential body and in appearing before Secretary Taft on behalf of the private dredges, it has added great weight to their cause.

The bill requiring owners of gasoline launches and motor boats to carry licensed officers is now practically defeated. For ten years this measure has fairly haunted every congress and has caused no end of annoyance and expense to makers of these useful little craft. It has been necessary to send representatives to Washington to appear before the committee on merchant marine and fisheries, which is in itself a considerable expense. The advocates of this bill do not appear to understand that in projecting this measure they are really attacking a very considerable part of the marine industry of the country. Were the bill to pass, it would instantly compel a great many of the makers of these little vessels to go out of business. The gasoline launch is primarily a vehicle of pleasure. Hundreds of them are, of course, employed in delivering supplies to vessels along the river front, but their real use so far has been to widen the domain of pleasure. It is to be hoped that the members of the committee on merchant marine and fisheries are now thoroughly conversant with this topic and that, if this bill is again presented at the next session, it will not be placed upon the calendar. It is a perfectly absurd thing to think of licensing these little craft when sailing vessels below 700 tons may go wherever they please without one.

Considering its limited resources, Canada spends proportionately vastly more money for the improvement of its navigable channels than the United States. It has spared neither money nor labor to make the St. Lawrence a navigable stream for vessels of deep draught and its canal system is one of the most extensive in the world. As will be noted elsewhere in this issue, it is now devising a set of rules, independent of the international rules, in order to conform to the White law under which the United States vessels of the great lakes are navigated. The purpose of this is to make navigation of the great lakes, both for American and Canadian vessels, absolutely uniform. It will render the possibility of misinterpretation of signals between vessels of these two nations impossible hereafter, since both will be alike. The department of marine expects to expend this year about \$1,000,000 in providing aids to navigation along Canadian waterways, including the great lakes.

LAKE RULES WILL BE MADE UNIFORM.

A conference was held at Ottawa recently between representatives of the Dominion Marine Association and representatives of the Dominion government in relation to the revision of the rules of lake navigation. The government was represented by Col. W. P. Anderson, chief engineer of the department of marine and fisheries; Com'dr Spain of the navy; N. P. McElhinney, nautical advisor of the Dominion government and W. L. Magee, chief clerk. The Dominion Marine Association was represented by A. A. Wright of Toronto, Capt. Thomas Donnelly of Kingston, with Frank King secretary of the association. The subject of the rules was debated in all its bearings with the result that it was decided by the joint committee that a set of lake navigation rules should be adapted for the inland waters west of Montreal, conforming to the White law and to be published separately from the international rules. These are now in hand and will no doubt be adopted by order in council. Col. Gordeau, deputy minister of the department, attended the meeting and assured the conference that the minister of marine and himself were strongly in favor of making the rules uniform for the navigation of lake vessels; in fact, the department of marine of the Dominion government would willingly have met in conference with the Lake Carriers' Association when the White law was adopted, had they been asked to do so, but as explained by Mr. Harvey D. Goulder in a recent article in the *Marine Review* (March 10) the time was so short that the department of marine was not consulted. The Dominion Marine Association is trying to clear away the obstacles regarding the navigation of Canadian vessels, and as they are inclined to go far more than half way, and as uniformity is greatly to be desired, it will undoubtedly be secured in the very near future.

ONE OF CAPT. PARKER'S EARLY EXPERIENCES.

Capt. John G. Parker of Ontonagon is the oldest living lake captain. He was identified with the commerce of Lake Superior in the early days. He sailed on the lakes for thirty years and then settled permanently at Ontonagon. He had many narrow escapes from shipwreck during his career and relates one of them on the propeller General Taylor, forty-five years ago, as follows:

"In the summer of 1859 I was sailing the propeller General Taylor. In the fall I received orders from Mr. Whiting, the owner, to go to the Bruce mines and load with copper for Detroit. These mines are situated on the east side of St. Joseph island in the St. Mary's river. I took on a full cargo of barrel copper from the Wellington, one of the group of mines there. I went out of the passageway between Drummond and Cockburn islands. The wind was blowing from the east. When off Thunder bay light in Lake Huron just before dark, the engineer, Mr. Higginbotham, came up to the pilot house and informed me that the steam pipes were leaking some. I went below and noticed that the steam was coming out from some of the joints. I then altered the boat's course for Tawas bay in order to keep in the soundings. I did not want to cross Thunder bay to Point aux Barques for fear the steam pipe might give out in deep water. About midnight the pipes opened and the boat came up in the trough of the sea. The wind was blowing a gale from the east and the sea was very heavy.

"In less than thirty minutes the fires were put out and the sea was making a clean breach through the companion stairs and the smokestack was swept away. The boat was so full of steam that I could not find a deck hand, but I got the two mates, Mr. Jarvis and his brother. We succeeded in getting the anchor off the rail and let it go in 60 fathoms of water. As soon as the anchor got hold of the bottom the boat came head to the sea. I let her drag a few miles toward Tawas to get into shoaler water and then set the deck hands to pumping her out. The next day the sea run down some. A

fisherman came along side to see if he could do anything for us. I sent the clerk, E. T. Prince, who now lives at Ashland, ashore, where he got another boat and went to Bay City and came back with a tug which took the Taylor to Detroit. A few barrels of copper which were stored on deck went through her bulwarks into the lake. The Taylor was a two-wheel boat. The lower panel and window in the clerk's room were smashed. Some one asked him how it happened and he replied: 'The sea rolled me through the lower panel into the cabin and the next sea took me back through the window landing me upon my couch.' The engineer, Mr. Prince, the clerk, the porter, whose name was Aldis May, and myself were getting ready to go home by land, not knowing that any boat was bound for Ontonagon. Capt. Eber Ward, owner of the Burlington, came to me and said that if I would go up on the Burlington he would take my crew and winter supplies up free. This was a good chance to get home as the boat was bound for Ontonagon. We went aboard and Capt. Ward said: 'If the Burlington is lost I will lay it to you,' so I piloted her to Ontonagon, arriving here Dec. 11."

SALVAGE CASE OF THE OWEN.

The salvage case of the steamer J. Emory Owen is attracting considerable attention before Judge Seaman in the United States district court at Milwaukee. The Owen was burning 7 miles outside of the mouth of the Sturgeon Bay canal and was rescued jointly by the steamer George Burnham and the car ferry No. 1. While there is no question as to the right of salvage there is considerable contention as to the amount of the reward. Scores of witnesses have been examined and the case is now before the court. The Ann Arbor railroad company, together with all the entire crew of the car ferry, have put in a claim for \$10,000. Their story is that the burning Owen was sighted at 12:40 p. m., when the ferry immediately bore down on her. She ran alongside and the crew of the Owen abandoned her, concluding that she was doomed. Notwithstanding, the officers of the car ferry say they resolved to endeavor to save her and two lines of hose were sent aboard the burning vessel.

While at work the Burnham came up and ran a line of hose to the Owen. After the spread of the flames were checked, the Owen in tow of the ferry, was taken into the Sturgeon bay canal, where she afterwards settled in 20 ft. of water. At the time of fire the Owen was laden with 66,500 bus. of oats and 32,600 bus. of barley consigned to Buffalo. The officers of the car ferry say the ferry with her cargo at the time was worth \$140,000 and she was delayed one and one-half days on her voyage at a time when her services were invaluable to her owners.

Adolph Greene of Green Bay and Frederick Schwermann of Milwaukee, owners of the George Burnham, dispute the story of the car ferry officers and assert that the ferry had backed away from the burning steamer and was leaving when the Burnham came alongside. When the officers of the ferry saw the efforts being made by the crew of the Burnham to save the Owen, they claim the ferry put back and then assisted in the salvage. At the time of the fire the Burnham, it is claimed, was not carrying insurance on either cargo or steamer. The steamer was worth, it is claimed, \$18,000 and her cargo, which was of lumber and added to her risk, \$12,000. The sum of \$10,000 is claimed as salvage.

Thirteen insurance companies have intervened and say that the injury to the cargo was caused mostly by water thrown into the Owen and it was the nature of a general sacrifice of the cargo to save the steamer. For that reason they claim that a part of the loss of the cargo should be charged against the steamer, and they ask the court to adjudicate the amount. They paid \$10,000 on the loss, but sold the cargo for \$10,600. Norman L. Miner, claimant of the Owen, was on board at the time of the fire. His version is that the United States light-house steamer Hyacinth did more effective work in saving the

Owen than either the car ferry or the Burnham, and without such valuable assistance it would have been impossible to save anything. Mr. Miner denies that the crew of the Owen abandoned her. Soon after the fire was discovered, he says, an accident to the pumps disabled them. When the car ferry came alongside the master and crew went on board. He alleges the car ferry was about to leave when the Burnham came along. Then the ferry backed up and the crew returned to the Owen and began to fight the flames with the assistance of the crews of the ferry and the Burnham. While being towed to shore the Hyacinth came up and rendered the assistance, Mr. Miner claims, that saved the Owen.

SHIP CANAL CELEBRATION AT SAULT STE. MARIE.

The newspapers of Sault Ste. Marie are becoming alive to the importance of celebration there to commemorate the opening of the first ship canal to commerce, as the following editorial from one of them will show:

"The Sault should revive its interest in the project of celebrating the completion of the first ship canal which is contemplated for July 12, 1905, inasmuch as Senator Alger has introduced a bill appropriating \$25,000 to defray the expenses of a committee of representatives and senators appointed to attend the celebration, to provide a suitable monument commemorative of the event and to pay for the compilation of a history of the Sault Ste. Marie ship canals. It is safe to say that if this bill passes and becomes a law that the Sault will see one of the most notable celebrations in its history. Such an event would bring here representative men from all parts of the country together with large numbers of excursionists from this and adjoining states. There has been a disposition on many sides to treat the effort being made to bring about the celebration rather lightly, but in view of what it means for this city it would seem that the least that could be done would be to in some official way urge the passage of the bill. A suitable resolution should be passed by the city council and similar action could very properly be taken by the chamber of commerce and copies of both be sent every member of the Michigan congressional delegation."

REPAIR WORK AT DETROIT.

Considerable repair work is under way at the ship yards at Detroit. At John Oades' ship yard the steamer Iroquois of the Richardson fleet will be made a double-decker. Mr. Oades has also been given an order to overhaul the United States lighthouse tender Haze of the tenth district. He has rebuilt the United States government steamer Hancock and made some repairs to the United States mail boat Florence B. Only the cabin work remains to be done on the City of Buffalo at the Orleans street yard of the Detroit Ship Building Co. The heavy ice has inflicted considerable damage upon the car ferries at Detroit, and all of them will have to have some work done upon them. The steamer Alfred Mitchell will be given a new wheel and the sand-sucker C. H. Little will be given two wheels. The Richardson steamer Devereaux, which was injured in striking the Glidden in the ship canal, will have repairs made to her bottom. Car ferry Pere Marquette No. 14, built for service between Port Huron and Sarnia, lost a wheel and rudder and part of one of her shafts in bucking against the ice in the river. The light-house tender Amaranth will go to the plant of the Great Lakes Engineering Works for a partial rebuild. The wooden parts of her fantail will be replaced with steel.

The Dominion government has been asked to expend a considerable sum in dredging and making other improvements at Delta, on Lake Manitoba, with a view of making it a port. The Canadian Northern Ry. has a line to Delta, but the port has never been available for anything but the smallest vessels.

TO LAUNCH THE WOLVIN.

On April 9 the American Ship Building Co. will launch at its Lorain yard the giant freighter, Augustus B. Wolvin, building for Capt. A. B. Wolvin and his associates. The ship building company will make the event worthy of the occasion for the Wolvin will be the largest freighter ever constructed in fresh water. There are only twenty-two liners in the North Atlantic trade larger than the Wolvin. The chamber of commerce of Lorain has issued an invitation in behalf of the town of Lorain to the launching and presents as well some popular facts concerning the steamer. The invitation reads:

"It can easily be imagined that to see a vessel 560 ft. in length, 56 ft. wide and 32 ft. deep glide majestically into the water will be a sight well worth witnessing. To give an idea of what the launching of a large ship really means, some facts relative to the steamer, Augustus B. Wolvin, to be launched at Lorain on April 9, 1904, are here given. In the first place, the length of this vessel, 560 ft., is greater than the distance in a square (between two streets) of a city. She contains 4,500 tons or 9,000,000 lbs. of steel, exclusive of machinery and fittings of every sort. More than 750,000 rivets are used in her construction. She will carry between 10,000 and 11,000 tons of ore and 300 tons of fuel, on 18 ft. draught. This is equivalent to 333 car loads or eleven train loads. The load is taken aboard through thirty-three hatches, or deck openings, and by means of modern unloading machinery it is expected the immense cargo can be discharged in six hours. The Wolvin will cost complete at least \$480,000 and perhaps an even half million. There are seventeen larger vessels in the world than this one, but they are ocean liners and carry passengers as well as freight, so this is the largest exclusively freight vessel in the world. The work of building the Wolvin was started Dec. 1, 1903, and twenty days have been lost by floods and bad weather. She is owned by the Acme Steamship Co., of which Mr. A. B. Wolvin is president. This launching will probably attract the largest gathering of marine men that has ever been brought together by a similar event anywhere on fresh water. The American Ship Building Co. will spare no pains for the entertainment of distinguished guests, the launching to be followed by a banquet in the mold loft of the company's shops. The citizens of Lorain will do everything in their power to help visitors enjoy the day. Band music will be furnished from a boat in the river during the launching, and everybody who wishes will be at liberty to go over the new vessel before the launching. Thirty thousand people can easily see the launching.

LAKE WRECKS AND CASUALTIES DURING 1903.

Norman B. Conger, inspector and marine agent at Detroit, has just issued a review of the season of navigation of 1903 as far as wrecks and casualties are concerned. He shows that navigation opened between Detroit and Cleveland on March 18 last year by the steamer City of Detroit, but little ice was encountered. The ice began to move out of the Straits of Mackinaw during the latter part of March and by the 27th it was practically all gone. The first vessel to pass the straits was the steamer J. D. Marshall bound down. The first vessel to pass through the canals at Sault Ste. Marie was the steamer Captain Thomas Wilson, bound up through the Canadian canal on April 9; the first boat bound down that passed through this canal was the steamer J. S. Fay on April 11; the first vessel to pass up through the Poe lock was the steamer H. B. Nye on April 11, and the first boat to pass down was the steamer Sultana. As known, navigation was closed by the passing through the Canadian lock of the disabled steamer John T. Hutchinson. The total number of vessels passing the port of Detroit during the season of navigation is 20,249, which is 2,576 less than for the season of 1902. The season of 1903 closed with a record of 157 vessels damaged to a greater or less extent; twenty-four became total losses and

passed into history through stress of weather and eighteen became total losses through other causes in the weather. The estimated amount of losses for the season is \$987,175, of which amount \$447,775 was in total losses and the remainder in partial losses. The loss due to fog was \$2,775 and the greatest amount in any one month, June, was \$176,000. A comparison of the casualties on the several lakes shows that the greatest loss is \$360,925 on Lake Michigan; the next greatest was \$340,200 on Lake Superior, followed by Lake Huron by \$129,900, Lake Erie \$116,450 and Lake Ontario with \$16,700. The loss last season due to weather conditions was considerably less than it was in the preceding season.

The number of lives lost through stormy weather during the season of 1903 was forty-nine, sixty-two less than last season; other causes, a total of one less than the record of last season. By lakes the record was as follows: Lake Superior, weather, six; other causes, twenty-two. Lake Erie, weather, ten; other causes, fifty-two. Lake Ontario, weather, ten; other causes, seven. Lake St. Clair and connecting rivers, weather, one; other causes, fifty-two. The loss of life from other causes were mainly those due to the capsizing of small boats, falling from docks, vessels, etc. The greatest loss of life in any one disaster occurred with the foundering of the steamer Erie L. Hackley, when eleven persons went down with the vessel.

FREIGHT SITUATION ON THE GREAT LAKES.

The Lake Erie dock managers and the delegates representing the International Longshoremen, Marine & Transport Workers' Association have been in session in Cleveland during the past few days endeavoring to arrange the wage schedule for the coming year. These meetings are always slow-moving, but it is expected that a satisfactory settlement will shortly be reached. There are no questions to be considered except the hours of labor and the rate of pay. The longshoremen have demanded last year's schedule of wages with a reduction in hours, which of course would be equivalent to an increase in wages. A reduction of hours is out of the question, and therefore the only real issue involved is the wage schedule. During the past two or three years affairs have been on a rather inflated basis, but things are settling now more to a normal condition. The dock managers represent that all other departments of the iron trade have suffered a reduction from 10 to 25 per cent, and that the ore handlers should in equity bear a part of it. Last season's ore handling charges to vessels was 21 cents a ton, and vesselmen are demanding a reduction from this figure. They are demanding a reduction of 5 cents, but would likely be satisfied if they could get 3 cents. The dock managers maintain that the handlers should bear a part of this reduction. Probably the dock managers would be satisfied if the men accepted a reduction of 10 per cent, but as far as reducing the hours of labor from eleven to ten, it probably would not be considered by them.

There is absolutely no change in the freight situation on the great lakes. No move has been made in any direction whatever. Neither masters nor engineers have, as yet, been engaged by the vessel owners and consequently there have been no conferences on the wage schedule. Everyone seems to be quite satisfied to delay the opening of navigation as long as possible, and it is not likely that there will be any movement of freight whatever throughout April. The price of ore for the season has not yet been determined, but another meeting is scheduled for next week in order to arrive at a common price if possible.

The Great Lakes Towing Co. will meet with representatives of the Licensed Tugmen's Protective Association on April 6 to adjust the wage schedule for the coming year. It is not anticipated that there will be any difficulty at arriving at a satisfactory adjustment as all outstanding differences brought over from last year have been satisfactorily determined. The advisory board of the tugmen's as-

sociation will meet in Cleveland on April 4 to decide upon their demands. The towing company will settle its affairs independently with the tugmen, though it may have the assistance of the executive committee of the Lake Carriers' Association in doing so. As soon as matters are adjusted with the tugmen, a conference will be held with the Tug Firemen & Linemen's Association.

FINE POSITION FOR WALTON H. MCGEAN.

Mr. Walton H. McGean will sever his connection with the firm of Hutchinson & Co. on April 15 to become the assistant manager of the combined Davidson and Tomlinson fleets of vessels, operated by the Davidson Steamship Co., the Globe Steamship Co., the Zenith Steamship Co., the Duluth Steamship Co., and the Superior Steamship Co. The Tomlinson fleet numbers seven steel steamers, six of which are in commission and one will go into commission during the coming season, and the Davidson fleet numbers fifteen steamers, making a total of twenty-two in all. Mr. McGean will, therefore, have under his care the second largest independent fleet of vessels on the great lakes. The Tomlinson fleet embraces the Sultana, Senora, Yosemite, Sinaloa, Sonoma, Saxona and the steamer, to be the second largest on the great lakes, now building at Lorain. The Davidson fleet embraces the Amazonas, Bermuda, Cartagena, Nicaragua, Orinoco, Rappahannock, Sacramento, Shenandoah, Venezuela, Chieftain, Grampian, Granada, Matanzas, Paisley and Pretoria. Mr. McGean's offices will be in the Perry-Payne building, in Cleveland. Mr. McGean has been in the vessel business since 1892, when he entered the employ of Palmer & Co. as a clerk. In 1897, when Mr. Charles L. Hutchinson withdrew from the firm of Palmer & Co. and formed the firm of Hutchinson & Co., Mr. McGean went with him as a partner and has continued as such ever since. He is one of the most progressive and best-liked young men in the vessel business. He has been conscientious and faithful in the performance of his duties and his progress is simply the reward of merit.

CHICAGO TUNNEL CONTROVERSY.

Quite a victory has been won by lake interests in causing the interstate and foreign commerce committee of the house of representatives to favorably report upon the bill declaring the tunnels under the Chicago river to be a nuisance and authorizing the secretary of war to notify the owners or managers to remove them. Owners of vessels trading in the Chicago river have complained for several years of these tunnels. Deep draught vessels cannot move up and down the river without bumping into them, as the tops of the tunnels project above the bed of the river. Many vessels have declined to trade in Chicago on this account. There are three of these tunnels which are either owned or leased by the traction companies. The bill provides that they shall be removed by their owners within a reasonable time. The secretary of war is authorized to send an engineer to Chicago to determine the length of time necessary to lower the tunnels, upon which the time limited will be based. When the time limited is once fixed, provision is made for a fine of \$10,000 per month which may elapse in excess before the tunnels are removed.

LAUNCH OF THE MISSOURI.

In this issue will be found several photographs of the steel passenger steamer Missouri, which was launched from the South Chicago yard of the Chicago Ship Building Co. recently. The Missouri is the third large steel passenger steamer that has been completed at this yard, the two former being the Manitou and the Illinois. She is being built for the Northern Michigan Transportation Co. and is intended for service between Chicago and Mackinac island. The Mis-

souri is 260 ft. over all, 225 ft. keel and 40 ft. beam. She is equipped with triple-expansion engines and Scotch boilers, supplied with Ellis & Eaves induced draft. The Missouri has excellent lines and is a fine piece of workmanship throughout.

FROM THE LAKES TO THE SEA.

Editor Marine Review: In Col. Symons' article in your special number of March 10 it is stated that all New York asks of the general government is completion of the 12-ft. improvement to Waterford on the Hudson and the ship canal and lock to Tonawanda. This seems to me of limited perspective like the barge canal itself. In the late campaign, under the auspices of the Rochester chamber of commerce covering the territory to the Hudson, the comparative merits of the deep waterway (federal) and the state bargeway as proposed, resulted in adverse vote against the barge canal of about 400,000. The larger vote in the metropolitan district for the canal referendum was under an exposition in which the anti-barge forces were purely on an anti-canal and "the railroads can do it all" basis, and the pro-canal forces and newspaper exposition was that this so-called 1,000-ton bargeway was "the best possible waterway and necessary to New York supremacy." In the one case, the vote was rather for deep waterway and federal action, and would probably have been so in the latter if it could have been presented properly.

It seems to us that the least the federal government can do if New York is to spend \$101,000,000 in enlargement of her canals, that it should complete the deep waterway around this side of Niagara, which is analogous to the Sault canal, of which the Black Rock harbor canal and lock is first step, and follows up throughout the lakes waterways in accord with the survey of the United States board of survey of adequate width and 21 ft., which we obtained in the last river and harbor bill with lake level regulation. President Roosevelt has appointed the American side of the international commission for this.

Such deep waterway involves but 12 miles of canal and nine locks and will pass the 9,000-ton vessel in nine hours into Ontario. It will cost but \$39,000,000 and bring the lake fleet all along New York's northern border, and to Oswego, the second end of the barge canal system of New York state. In the same connection, it would seem as if the federal government could also, as part and parcel of this arrangement, deepen the upper Hudson to 21 ft., which would cost less than \$10,000,000 and is less under water excavation than our small neighbor, Canada, has made to bring 30 ft. to Montreal.

These two would represent an expenditure by the nation of less than half New York's, independent of her inland barge system and yet inter-connected therewith.

This leaves, then, for consideration the Oswego-Mohawk common route to the federal and state surveys already made. The United States board of survey stated that in the Mohawk, at least, the canal must be of increasing cross section as we go down the stream, to avoid erosion of the bank and care for the waters received. The state canal referendum merely authorizes an expenditure of \$101,000,000 for new waterways outlined, at least 12 ft. deep, and with minimum width of 75 ft. in made canal and 200 in river sections. Using the federal surveys and series of dams with slack water pools in the river sections will be better than state surveys for bargeway of confined structures likely to be torn out by flood, will cost comparatively little more and have added advantage of obviating flood damage and providing maximum storage for power and industry. Such treatment of the river sections would cover half the distance between Ontario and the Hudson and be so much toward a deep waterway.

The other sections are the 46 miles between the canalized Mohawk and Oneida lake and between this lake and Oswego, in which there is only 13 miles of actual canals.

It should also be noted that the deep waterway from Os-

wego to Oneida lake on the 21-ft. basis would cost but \$20,000,000, and with spur to Onondaga lake \$5,000,000. Of this about half might be contributed by the state of New York as what she was going to spend for the more limited bargeway. In this way, by state and federal co-operation for about \$50,000,000 the lake navigation system would be extended from Lake Erie to the Central New York lakes and lake vessels up to 9,000 tons get there in twenty-five hours, or less than half the time the 1,000-ton barge would be coming and with its transfer delay. This Niagara-Oswego-Mohawk deep waterway is the only feasible one wholly American. Col. Symons says it is inadvisable, but the two commissions appointed by Presidents Cleveland and McKinley think otherwise and have reported otherwise, as do most all the best engineers in the country.

There are over 500 vessels of over 1,000 tons now cooped above Niagara, two-thirds the American fleet, for which this would afford a way out as for all future output of the lake ship yards which build as cheaply as any. It would give us a superior ingress and egress to all the great lakes and seaboard, superior to Great Britain's, and insure our naval and commercial supremacy. Such deep waterway will have three times the capacity of the bargeway, only half the number of locks or miles of canal, and the transit of lake vessels therein from Lake Erie to New York will be twice as rapid as that of the 1,000-ton barges, while the freight rate therein will be half that of the bargeway.

The time for action is now, before this common route is occupied by the inferior and inadequate barge waterway which special interests have promoted for their own purpose. There is no section of this deep waterway that is as long nor as difficult as other existing world canals and no lock so large as the Poe lock at the Sault. It is just as feasible as any or as the barge canal and is more navigable. In its stable situation, where the genius and means of the age are concentrated, it involves no such problems as the Panama, which we have already undertaken, while the business in sight, if it merely carried on what goes through the Sault, is five times the most sanguine estimate for the Panama or any other world canal. It can be built *pari passu* as a waterway for the benefit of the great northern states and Atlantic, as the Panama is more directly for that of the southern and Pacific. It is the peculiar interest of all great lake territory to which is tributary the major portion of the wealth and population and freight movement of these United States, and it should be carried on *pari passu* and on some form of co-operative basis with the new waterways which the state of New York has undertaken to construct. A contribution by the nation equal to that contemplated by the state will build the deep waterway into Ontario and from there to Hudson deep water, and allow the state of New York to complete her canal system otherwise on the projected barge basis dovetailed therewith, thus giving the ideal system of waterways both for state and national requirements, and the other states the through deep waterway they need and the state better waterways than she contemplates or could alone afford, perhaps, upon about an equal contribution from the state and the nation; and now it is possible for the nation to get this through deep waterway at half the estimate of the federal surveys so carefully made by seven years' intelligent work and an expenditure of \$500,000 as compared with the \$5,000 and brief time Col. Symons was enabled to spend aside from his regular duties in deciding a ship canal or deep waterway inadvisable and impracticable and in projecting a barge canal instead.

By the United States board of survey report, the 20-ft. deep waterway from Duluth and Chicago to New York costs about \$200,000,000 and we have already provided it throughout upper lake channels to Niagara, and to carry it on in conjunction with the New York effort, the lake interests must move now and earnestly.

JOHN A. COLLIER WRIGHT.

Rochester, N. Y., March 23, 1904.

AROUND THE GREAT LAKES.

The steamer Alva of the Bradley fleet is still hard aground at Toledo.

August Jean of Buffalo has bought the steamer Alcona from Drake & Bartow. She will be cut down to the lumber trade.

Evan Jenkins of Cleveland, vice-president of the Marine Engineers' Beneficial Association, gave an address to the marine engineers at Toledo last week.

The engine for the new freighter R. W. England, building at the yard of the Great Lakes Engineering Works, Detroit, Mich., is ready to be installed.

The tug Madden of the Donnelly Contracting Co.'s fleet, having just been released from the ice at Stony Point, Buffalo, will be taken to dry dock for repairs.

The tug Major Kingman for two seasons under contract to the Donnelly Contracting Co. has been chartered by the Empire Line. Capt. Charles Nash will sail her this year.

M. F. Butters of Ludington, Mich., has sold the steamer M. F. Butters. The Butters has been engaged in carrying lumber to Chicago since 1882, and will now be transferred to the salt trade.

The schooner Ford River has been sold to the Kelly Shingle Co. of Traverse City for \$4,000. The steamer Resumption is also offered for sale. Both these steamers were in the lumber carrying trade.

The steamer Lincoln, which has had a rather checkered career on Lakes Erie, Ontario and Huron, is sunk in her dock at Windsor. She is in 40 ft. of water, but it is expected that she will be raised.

Capt. R. R. McLeod will have charge of the new collier Marquette and Bessemer No. 1, which will operate between Conneaut and Port Stanley. Mr. E. Wood will serve as engineer of the collier.

It is reported from Toronto that there is danger that the Ontario government's guarantee of a \$2,000,000 bond to enable the Consolidated Lake Superior Co. to continue operations at the Sault may be withdrawn.

Ashley & Dustin, managers of the steamer Frank E. Kirby, expect to put the steamer in commission on April 11. The Kirby is now at the plant of the Detroit Ship Building Co., undergoing slight repairs.

It is stated that the steamer Urania will run between Buffalo and Crystal Beach this summer. She formerly ran between Cleveland and Port Stanley. She is a wooden vessel 124 ft. long, 73 ft. beam and 28 ft. deep.

Maj. Lansing H. Beach, light-house engineer with headquarters at Detroit, will charter the steamer Miani owned by John Stevenson of Detroit for the Spectacle reef at the eastern entrance of the Straits of Mackinaw. The Spectacle reef light is to be constructed at a cost of \$96,000.

Shipping interests in Canada propose to ask the Dominion government to further improve the locks of the Lachine canal at Montreal; to lengthen the entrance lock at Morrisburg, Ont., of 280 to 800 ft.; to deepen the Welland canal and to complete the Trent Valley canal from Lake Ontario to Georgian bay.

The large canal which is being built at the plant of the Buffalo & Susquehanna Iron Co. at Buffalo will be finished, it is expected, by July 1. Mr. Charles W. Goodyear says that when the canal is finished it will be possible for the largest ore-carrying vessels on the lakes to enter the waterway and unload almost into the furnaces.

The steamboat companies, operating lines across Lake Michigan, have sent out an announcement to shippers that their vessels will begin service next week. The Goodrich Line will send the Atlanta and the Barry Line will send the Alice Stafford to Muskegon. The Dunkley-Williams Line will put the City of Benton Harbor in commission.

The Great Lakes Engineering Works at Detroit has closed a contract with the United States government for the con-

struction of four immense vertical, cross compound, automatic engines for the League Island navy yard. They will each develop 1,000 H. P. and will be direct-connected with generators which will supply the power for the dry dock pumps and lighting. The cylinders of the engines will be 20 and 40 by 30 in. stroke.

A dispatch from Two Harbors reports that the ice is 30 in. solid in the harbor and that Lake Superior is frozen clear across. Never since Two Harbors became an iron ore shipping port has there been so much ice there as now. The ice at Sault Ste. Marie is 30 in. thick under a heavy layer of snow. At Detour there is 20 in. of ice at the mouth of the river and it extends about a half-mile into Lake Huron. The ice in Hay and Mud lakes is 30 in. thick.

The Pittsburg Coal Co. has received contract for fueling the Detroit & Buffalo Line and will build a lighter for that purpose. The advantages of fueling by lighter are that it can be done without in any manner interfering with the loading and unloading of freight. While the steamer is in dock discharging or taking on her cargo, the fuel lighter is at work on the river side. Mr. John A. Donaldson of Cleveland closed the contract for fueling these steamers with Supt. A. A. Schantz last week.

There is considerable activity in marine rebuilding at Marine City. Most of the work is being done at Kenyon's ship yard. The steamer Britannic of the Mills, McMoran Transit Line, is being replanked and otherwise repaired at a cost of \$8,000. The steamer A. D. Hayward is to receive a new deck and new bulwarks. The steamer Toltec and consort Miztec are being recaulked. The steamers Gogebic, Sawyer, Redfern, Tuxbury, Thomas Scott, George Kink and the barges Troy and Montpelier are also undergoing repairs.

Maj. W. L. Fisk of Detroit awarded several contracts last week for the improvement of St. Mary's river. The Chicago & Great Lakes Dredge & Dock Co got the contract for removing approximately 3,100,000 cu. yds. of material at 12.9 cents per cu. yd., bank measurement; and approximately 33,000 cu. yds. of the hardpan at 98 cents per cu. yd., bank measurement. S. O. Dixon of Milwaukee was the lowest bidder on the removal of approximately 5,500,000 cu. yds. of material in Hay Lake and he was awarded the contract. His price was 12 $\frac{3}{4}$ cents per cu. yd., bank measurement.

Col. Charles E. L. B. Davis has reached Detroit and will immediately assume charge of the United States engineer office in that district. He will have charge of all government deep waterway improvements between Bar point and the lower end of Lake Superior. Maj. W. L. Fisk of the United States Lake Survey, who relieved Maj. W. H. Bixby on leave of absence, was temporarily in charge of this work. Col. Davis has just come from the Philippines. He was born at New Haven, Conn., Feb. 16, 1844, and graduated from the West Point military academy in 1866 as second lieutenant, corps of engineers. He was lighthouse engineer at Detroit in 1882 and has served in all parts of the country.

Considerable yacht repairing is now under way at Toledo. At Harrison's ship yard more than thirty boats of all kinds are laid up, either in the shop or in the yard, and nearly all will need some kind of repair. Notable among the sailing craft is the Oberon, which is to have a new stern, new ribs and a remodeled cabin. The Ethel, the former flagship of the Toledo yacht club, will have some new ribs and new planks. The Alice Enright is undergoing repairs and the work of overhauling the Puritana is begun. Other yachts to be repaired are the Juanita, the Helen, Typhune, Mildred, Gracie, Mirna and Elizabeth. The Lacey, a well-known power boat, and the Novia, a 60-ft. launch, are to be overhauled. Mr. Harrison is building a speed launch for Lacey Bros., which will be the first of its kind to appear in Toledo. She will be 25 ft. over all and 4 ft. at the stern, while her bow will be sharp. She will have a 4 H. P. Lacey engine.

CANADIAN SHIPPING NOTES.

The department of railways and canals is inviting tenders for the electric lighting of the Welland canal between Port Colborne and Port Dalhousie, Ont.

The St. Catharines, Ont., board of trade advocates the construction of 4 miles of canal, from Lock 2 on the old canal to Marlatt's pond, to relieve congestion on the Welland canal.

The Canadian Pacific railway is preparing plans for extensive additions to its wharves at Victoria, B. C., but it is not expected that the construction work will be taken in hand this year.

Bowring Bros. of St. Johns, Newfoundland, have chartered the *Mary Hough* of Liverpool, 869 tons gross, and the *Prospero* of Christiana, Norway, for the coastal service pending the building of new steamers.

The Pere Marquette railroad has made application to the Dominion parliament for power, under the charter of the Lake Erie & Detroit River Railway Co., to construct a branch line from Walkerville to near Amherstburg, and for power to operate a car ferry service on Detroit river in connection therewith.

The John Island Tug Co. is the title of a company registered under the laws of the province of Ontario, to carry on business on the great lakes. G. H. and W. C. Moulthorp of Bay City, Mich., and J. McEwan of Sault Ste. Marie, Mich., are the provisional directors. The capital is \$8,000 and the head offices of the company are at John Island, Ont.

The Bowring Bros. of St. John, N. B., will have two steamers built in Great Britain for the coastal service in Newfoundland, the contract for which has been placed with them by the government. The steamers will be 200 ft. long, 31 ft. beam, 16 ft. deep to the main deck, and specially built for winter navigation. They will have a speed of 12 knots an hour.

The hull of the new stern wheel steamer for the Hudson's Bay Co. will be built at Fort Vermillion, on Peace River, and it is probable that others will be built there subsequently. A. Watson of Victoria, B. C., who will have charge of construction, has already superintended the construction of a number of similar steamers for the company on the Pacific coast.

The Northern Navigation Co. proposes to reduce the pay of captains and engineers on the various steamers of its fleet 16 1/3 per cent, and to date contracts for the coming season have not been signed. It is also proposed to reduce the number of steamers on the routes, but to give the same service as last year. It is hoped to find new routes for the steamers which will be taken off the old routes.

The Northern Navigation Co. will operate its steamers in four divisions for the current year. The Lake Superior division will operate from Sarnia to Port Arthur, Fort William and Duluth; Georgian and Mackinaw division from Collingwood and Owen Sound to Sault Ste Marie and Mackinaw; the North Shore division, from Collingwood to French river and Killarny; and the Penelang and Parry Sound division, from Penetmshere through the 30,000 islands.

The Bertram Engine Works Co. has under construction at its ship yard, Toronto, in addition to the ferry steamer for the Wolfe Island township council, general dimensions of which have already been published, a large grain carrier for builders' account and three steamers for the smaller inland lakes. A 92-ft. steamer is building for P. P. Younge of Peterboro, Ont., for passenger and freight trade on Kanartha lakes. She will be fitted with fore and aft compound engines, 6 and 8 in. by 12 in.; Fitzgibbon boiler, 54 by 69 in. The Glass Reef Towing Co. is having built a 50-ft. tug, fitted with high-pressure engine, 8 by 8 in., Scotch boiler, 54 by 72 in.; and the Rat Portage Lumber Co. is having built a 72-ft. tug, fitted with compound engine, 10 and 22 in. by 16 in., Scotch boiler, 70 by 120 in. The grain carrier is expected to be launched early in April. Her di-

mensions are: Length, 256 ft.; breadth, 42 ft.; depth, 18 ft. She will be fitted with triple-expansion engines, 15, 25 and 42 in. by 30 in., and two return tubular Scotch boilers, 10 ft. by 11 ft.

The new freight line to be established possibly by the Canada Lakes & Ocean Navigation Co. and the New Ontario Steamship Co. will be named the Merchants' Montreal & Lake Superior Line, and its headquarters will be at Hamilton, Ont. The steamers which will be found by the Canada Lakes & Ocean Navigation Co. are those mentioned in last week's issue of the Marine Review, but the New Ontario Steamship Co. will put on the *Wacondah*, *Arabian* and *Neevana*. These steamers will give a service each way between Montreal and Port Arthur, twice a week, calling at Toronto, Hamilton, Cleveland, Detroit river points, and probably one or more Lake Huron ports. The line will work in harmony with the Canadian Inland & Ocean Line, which operates steamers between Montreal and ports in Great Britain and the continent of Europe.

The transportation commission is holding sittings at different points in Ontario with a view of obtaining information respecting the routes between the Upper Lakes to Lake Ontario. The routes to which special attention is being paid are the Trent Valley canal, which at present is in an incomplete state; the projected railway from Collingwood to Toronto, promoted by the Canada National Railway & Transport Co. The first of these routes will give a 6-ft. barge navigation from Georgian bay either to Port Hope or Trenton, on Lake Ontario, while the latter will necessitate handling of the grain at Collingwood and again at Toronto. Trenton and Port Hope are fighting each other to secure the terminal of the Trent Valley canal, and the end will probably be that there will be a terminal at both points, though neither will be what the terminal of such a waterway should be. Trenton is not only the point at which it was originally intended to have the terminal, but it is naturally fitted for it, as it will bring the barges out into the Bay of Quinte, from whence they can be towed through sheltered water to Montreal, whereas from Port Hope there is about 35 miles of open water before the canal leading into the Bay of Quinte is reached. Those interested in the promotion of the Canada Railway & Transport Co. are Toronto people who desire to have the handling of a portion of the through grain trade there. Incidentally the project of the Lake St. Clair and Lake Erie canal will be looked into before the commissioners hold sittings at Collingwood, examine the French river ship canal project, and go on to Lake Superior. The commission may be a genuine attempt on the part of the government to lay out a truly national project and to decide once for all that local jealousies will no longer be permitted to prevail in securing money from the public funds to develop ports that can by no stretch of imagination ever become of national importance.

The following appointments for the season are reported:

Northern Navigation Co.'s steamers: *Huronic*—Capt. R. D. Foote, master; S. Brisbane, chief engineer. *Monarch*—Capt. C. Ribertson, master. *Majestic*—Capt. A. Campbell, master. *City of Collingwood*—Capt. G. W. Playter, master; C. Robertson, chief engineer. *City of Midland*—Capt. A. M. Wright, master; W. Whipps, chief engineer. *Germanic*—Capt. W. G. Cox, master; Jos. Aston, chief engineer. *City of Toronto*—Capt. W. B. Kitchen, master.

Richelieu & Ontario Navigation Co.: *Quebec*—Capt. Boncher, master; *Canada*—Capt. St. Louis, master; *Virginia*—Capt. Dongal, master; *Carolina*—Capt. Fortni, master; *Saguenay*—Capt. Laperrie, master. These steamers are on the Montreal and Saguenay run.

Farrar Transportation Co.: *Newmount*—Capt. Bassett, master.

Rockport Navigation Co.: *Victoria*—Capt. J. A. Carnegie, master.

IMPROVEMENT IN SHIP BUILDING.

Many Orders for New Ships, Including Tramps, Being Placed on the Clyde—New Cunarders will Likely Have Turbines—Wreck of the Scotia.

Glasgow, March 17.—It is remarkable how many orders for new ships, including tramp steamers, are being placed both on the Clyde and in the north of England. The only explanation is that owners have made up their minds that costs will not be lower, and certainly material seems more on the up grade than otherwise just now, whilst wages cannot be touched again for six months or so, even if employers be then inclined to raise the question when employment is brisk. But although there has been so much booking it has not been general, and it is to be feared that a very considerable portion of it has been at unremunerative figures and on extended credits. It is stated that some contracts have been booked by north of England builders at the price of the steel plates, say £5 12s. 6d. per ton, with a very long option off to the buyers for payment. This is bad business and may have unpleasant results, though for the time being it serves to keep the yards occupied. On the Clyde here there is less of the "tramp" building, but builders confess that they have to cut very low for such orders as they are now obtaining and I doubt if there is any profit at all in them, overhead, except among the specialties. But ship builders, like ship owners and coal masters, have to take their share of periods when business is like exchanging a dollar for ninety-five cents.

The directors of the Cunard company with representatives of the admiralty and of Swan, Hunter & Wigham Richardson of Wallsend-on-Tyne, have just been visiting the works of John Brown & Co., Clydebank, for the purpose of joint consultation about the building of the two new high-speed steamers for the Cunard Line. It is understood that while the contracts have not yet been formally placed, the vessels will be built by John Brown & Co. and Swan, Hunter & Wigham Richardson. The Clydebank company will, under license from the Parsons Marine Steam Turbine Co., make the Parsons turbines for the vessel to be built at their yard, while the turbines for the steamer to be built by Swan, Hunter & Wigham Richardson will be supplied by the Wallsend Slipway & Engineering Co., under a license from the Parsons company. When John Brown & Co., Clydebank, lay down soon this big turbine steamer their establishment will be a sort of Cunard dockyard. They have on the stocks the two sister ships Caronia and Carmania, one to have reciprocating engines and the other Parsons turbines. The Carmania is being laid down on the berth from which the battleship Hindustan was recently launched, while the framework of the Caronia is going up close alongside. The next berth will be used for the big steamer as it is the best berth in the yard in launching facilities. In the dock at Clydebank there is the purchased Pannonia, now undergoing transformation from a meat carrier to an intermediate Cunarder. John Brown & Co. will have, therefore, four Cunard steamers, aggregating over 50,000 tons, on hand at the same time. They have still room for additional work.

Advices have been received that the London cable steamer Scotia is ashore near Guam, and is likely to become a wreck. The loss will fall heavily upon London underwriters, as she is insured for £50,000, including cable, machinery and electric light apparatus, valued at £20,000. The insurance is distributed between Lloyd's and the marine insurance companies. The Scotia was built at Glasgow in 1862 by R. Napier & Sons, and is of 4,676 tons. She was until recently owned by the Telegraph Construction & Maintenance Co. She is one of the oldest and most successful cable-laying steamers constructed and she has been well kept up, although forty-two years old. Last year she was transferred to the service of the Commercial Pacific Cable Co., who employed her to take 464 knots of cable from London to Singapore, to be laid in conjunction with the cable steamer Recorder between the

Dutch East Indies and Borneo by way of Sumatra. This was successfully accomplished. For many years until recently accidents to telegraph cable and cable steamers were remarkably few, and this class of business has hitherto paid underwriters handsomely, especially in the case of cable shipments, which frequently amount to a quarter of a million sterling each. In December, 1902, however, the Great Northern, belonging to the Eastern Telegraph Co., and insured for £29,000, was wrecked off Zanzibar, and the same company's steamer Chiltern sank after collision at Devonport in January last.

A new type of floating coal depot is preparing for Portsmouth dock yard. This vessel is about the length and breadth of a battleship, 424 ft. by 67 ft. 9 in., and her loaded displacement will be about the same, as there is storage accommodation for 12,000 tons of coal. The hull was built by Swan & Hunter on the Tyne, and is divided transversely by six bulkheads, the bow compartment being devoted to the accommodation of the crew and ordinary stores, while the aft compartment holds the boilers, the electric generating plant and the ventilating appliances, which last are supplied by Mechan & Sons of Glasgow. The central part of the hull is arranged into ten holds for the storage of coal in longitudinal and transverse bulkheads. Down the center is a passageway, 9 ft. wide (between the longitudinal bulkheads), to facilitate the run of coal from the holds into movable chutes and thence into bags. Opening onto this passage are some 240 trap doors arranged at various points in the hopper bottoms of the holds, and for affixing to these doors there are eighty movable chutes. The coal thus passes into bags without any shoveling, its flow being regulated by means of grates worked by hand levers. Trolleys may be used in this passageway, but the bags will be raised from the chutes by a Temperley transporter. Three transporters are carried on towers which travel along the deck, and their arms will lift the bags from the passageway and deposit them at any point up to 20 ft. beyond the side of the floating coal depot and 33 ft. above water level. All the gear is electrically worked. It is expected that the rate of transferring coal from the depot into a warship will be 500 tons per hour. With one such vessel on each side of a warship 2,500 tons could be taken on board in two and a half hours.

The arrival at Chefoo of the British steamer Foxton Hall, which had been detained by the Russians at Port Arthur since Feb. 8, is of considerable importance to underwriters. The Foxton Hall was insured against war risks with a cargo of coal consigned to the Russian admiral at Port Arthur and, as she was not allowed to leave the port in due course after arrival, it was feared that she might be destroyed or damaged by bombardment. Therefore the owners abandoned the steamer to the war-risk underwriters, who refused to accept the abandonment, on the ground that the captain and crew were alleged to have left the vessel in charge of the Russians, and were not compelled to leave by force. Some of the original underwriters had reinsured their lines against war risks at rates varying from 40 to 20 guineas per cent, and others against loss by bombardment at 10 guineas per cent. These underwriters who retained their original lines are now in the best position, and it is expected a claim will be made upon the Russian government for the loss of food stuffs and certain parts of machinery on board said to have been stolen. War risk business generally now shows a decline in rates, except as regards coal and munitions of war to Port Arthur and Vladivostok, for which underwriters are quoting as much as 50 guineas per cent against the risk of capture. Owing to Japanese successes, non-contraband cargoes in neutral steamers for Japan via the Cape are now being placed at 30 guineas per cent as against 40 guineas per cent a short time ago.

One of the most numerous merchant fleets in the world is the Elder-Dempster, which now consists of over 100 vessels, with another dozen at present in construction. The latest addition, the Zaria, built by the Clyde Shipbuilding & Engineering Co., Port-Glasgow, is now ready.

LIVERPOOL SHIPPING LETTER.

The Fight for Gross Tonnage Measurement of Ships—The End of a Famous Cunarder—British Government Subsidies to Steamships, Etc.

Liverpool, March 21.—As I remarked in my last letter, more than average interest is being manifested by British shipping in the fight that Liverpool is making for the equitable settlement of an intricate dues problem. The parliamentary inquiry into the Mersey docks and harbor board's bill, which seeks to alter the basis of levying dues from net tonnage to 50 per cent of the gross tonnage, has this week concluded, and the decision is calculated to cause embarrassment to both the dock board and ship owners who opposed the bill. Instead of obtaining power to charge dues on not less than 50 per cent of the gross tonnage, the house of lords' committee has altered the clause to read "not other than 50 per cent" of the gross tonnage, and this has had the effect of creating a curious situation. The object of the dock board was to collect more money by a readjustment of the net tonnage basis, but the clause as revised will enable those vessels which were rated on a net register of from 63 to 65 per cent of the gross to escape with 50 per cent, and this would mean an actual annual loss of £105,000, or one-sixth of the total revenue of the dock board, unless the rate is increased from 1s. 4d. to 1s. 8d. per ton. Needless to say, the latter will be resisted by the whole force of Liverpool shipping, and the result will probably be that this second attempt of the Mersey dock board to penalize fast passenger steamers and coasters on account of their low net register will fail by the bill being withdrawn. The members of the dock board now profess to be in agreement with the clause as revised, providing that they increase the port charges to 3s. 8d. per ton to make up the deficiency, but ship owners argue that the gross tonnage principle is diametrically opposed to the principle on which the Liverpool rates have hitherto been levied, and its adoption and sanction by parliament will lead to rather remarkable complications and anomalies. In the first place, although the British net registered tonnage, carefully and scientifically arrived at, will be the basis of charge for British ships at nearly all foreign ports, it will be ignored altogether for dock tonnage rates at this important British port. Then again, although the new basis of 50 per cent of the gross tonnage rates will be adopted for dock tonnage rates at Liverpool, the net tonnage will still remain the basis of charge for light dues at the same port. Further, sailing ships which do not come under the bill and which will still have to pay on their full net tonnage as before (about 95 per cent of the gross), will be charged on the increased rate and severely punished; deck cargoes, which are charged according to the space occupied, will derive no benefit from the 50 per cent basis and will also be charged on the increased rates, while the dues on coastwise vessels will also be generally increased. Altogether, it is difficult to see how the bill in its present form can succeed when it comes before the house of commons, for one thing is certain, that it will encounter the bitter opposition of not only the Cunard company, but the White Star Line as well, besides the numerous interests of the cargo trade. The discussion has at least emphasized one point, namely, that this question of tonnage measurement is one for government legislation and cannot be satisfactorily dealt with by local or private bills.

In this connection it may be mentioned that the directors of the Cunard company, together with representatives of the British admiralty, have during the past few days had a consultation with representatives of Messrs. Swan, Hunter & Wigham Richardson, Wallsend-on-Tyne, and Messrs. John Brown & Co., Clydebank, with regard to the building of the two new fast passenger and mail steamers for the Cunard Line. Although the contracts have not yet been placed there does not seem to be the slightest doubt that the two firms named will, as has over and over again been stated, secure the orders for the steamers. It is confidently stated that the Clydebank firm will, under license from the Parsons Marine Steam Tur-

bine Co., make the Parsons turbines for the vessel to be built at their yard, while the turbines for that to be built by Messrs. Swan, Hunter & Wigham Richardson will be supplied by the Wallsend Shipway & Engineering Co., also under a license from the Parsons company.

SUBSIDIES OF BRITISH GOVERNMENT.

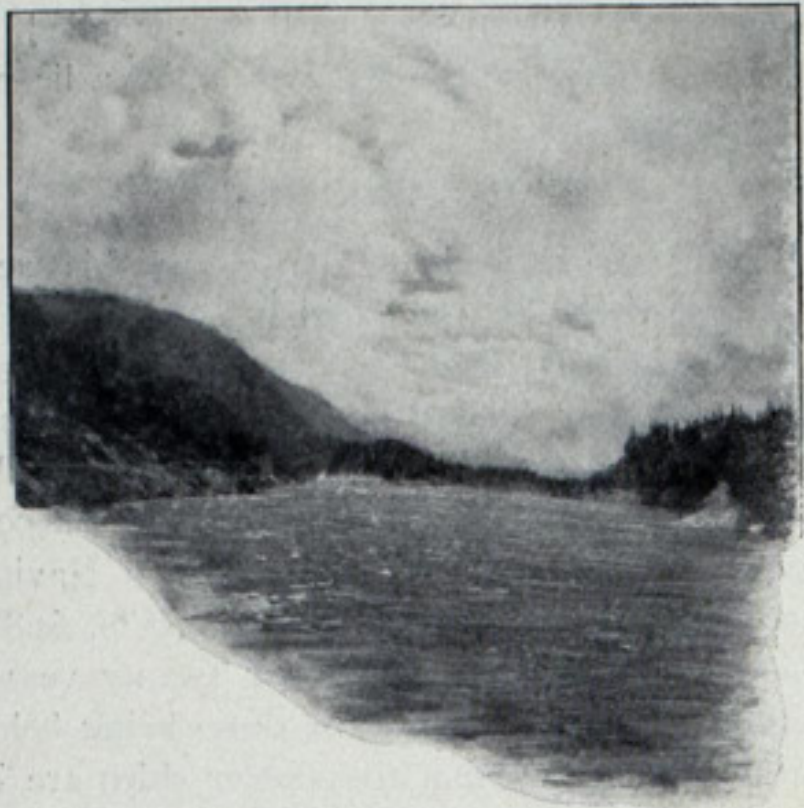
Of a most interesting nature is the return issued this week in regard to subsidies given by the British government to British steamship companies. The Cunard company comes first with £229,881, the other amounts being: The Oceanic Steam Navigation Co. (White Star Line), £185,970; Peninsular & Oriental Co., £161,375; Inman Steamship Co., £26,990; Royal Mail Steam Packet Co., £7,117; Orient Steam Navigation Co., £7,063; and the Pacific Steam Navigation Co., £4,885. With reference to the Cunard line subvention, twenty vessels are embraced therein, the speed of nine of these being below 13 knots. The return points out that the slower ships are included in the arrangement chiefly for the purpose of the mortgage on the company's property which forms the security for the construction loan for the two new high-speed ships to be built with an estimated speed of 24½ knots.

The new Cunard twin-screw steamer, Slavonia, has just sailed from Sunderland for the Mediterranean to commence the new service of the Cunard Hungarian-American line, from Trieste and Fiume to New York. She is a very handsomely fitted steamer, with spacious and comfortable accommodation for first, second and third-class passengers, and will run regularly in conjunction with two other steamers between the above named ports. Her length is 528 ft., beam 59 ft. 6 in., depth 34 ft. 7 in., and gross tonnage 10,500 tons. It is more than probable that this new Hungarian service will mean a cutting of rates, for it will enter into direct competition with the North German Lloyd and the Hamburg-American companies, who last year carried to American ports no less than 206,011 emigrants from Austro-Hungary.

As I have stated in a previous letter, negotiations have been proceeding between the German Transatlantic lines and the Canadian Pacific Railway Co.'s Atlantic steamship department with regard to the carrying of continental passengers. It is now stated on good authority that an agreement with regard to the continental passenger traffic on these lines I foreshadowed has been ratified. The Canadian Pacific Railway Co. is about to establish a passenger steamship service between Antwerp and Canada, the boats sailing about every ten days from Antwerp. The continental lines, it is reported, will shortly act as booking agents for the Canadian Pacific Railway Co.'s continental passengers in place of the present continental agents. The continental lines have undertaken to pass the Canadian Pacific Railway passengers through their control stations in the interior of Europe. This gives the Canadian Pacific railway the privilege of getting emigrants through from Southern Europe to Antwerp. The continental passengers of the company, it is stated, will in the immediate future nearly all depart from Antwerp to Canada, which will be a distinct loss to Liverpool. The last steamer from Liverpool carrying European emigrants under the present existing arrangements will probably be the Lake Erie, sailing on the 29th inst. The Canadian Pacific Railway Co. will maintain their present weekly service to Canada in addition to the Antwerp service, but after the latter date the passengers will be mainly all British and Scandinavians by the Liverpool service.

The New Zealand government has accepted a tender from the Federal Shipping Co. for a direct monthly service to and from Liverpool, Glasgow, Bristol and Cardiff. Freights are not to exceed those hitherto current between New Zealand and London. The contract, which is for three years, also provides for reduced fares for emigrants of the farming class.

WHERE ROLLS THE OREGON.



One thing in which America is rich is the opportunity for sight-seeing by means of waterways. Certainly no country in the world offers such a variety of choice to the nautical tourist. From Duluth to the Gulf of St. Lawrence is a stretch of nearly 2,000 miles of inland wa-

terways. "In all the world," says the Great Northern Line very truly, "there is no trip like this;" but there are other trips which are quite as distinctive. For instance, the trip from Cincinnati to New Orleans along the Ohio and Mississippi rivers and a trip along the Columbia river, "where rolls the Oregon and hears no sound save its own dashings." It is with the Columbia river that the present article has to do. Columbia river scenery is rapidly claiming the attention of the traveling public. It is titanic in its aspect, majestic, severe and wild, but like everything else during these latter days, conveniently reached through the energy of private capital. The Regulator Line of steamers operates on the Columbia river between Portland and the Dalles. Their three steamers, Sadie B., Bailey Gatzert and Dalles City, are comfortable and well adapted to their work. The photographs accompanying this article will show somewhat of the unusual conditions obtaining in the navigation of this great salmon stream. To eastern eyes everything is very novel about the Columbia river trip. The trip up the Hudson river is a very beautiful trip, but the scenery along the Hudson, while grand, is most orderly. The manorial estates established along the Hudson have done much to smooth its rugged beauty, but no hand has ever stroked the wrinkles along the Columbia. Savage cliffs, beetling crags and obelisks of adamant are the common procession along the Columbia. Palisades of lava rise thousands of feet above the mighty river and their giant peaks are always among the clouds. A historically interesting spot along the river is Vancouver—the old Fort Vancouver of the Hudson Bay Co., just about at the mouth

of the Willamette river. This fort is interesting to Americans because Grant and Sheridan were once stationed there and both took part in Indian uprising. Sheridan in particular commanded the expedition from Fort Vancouver to succor those besieged at the block house at the Middle Cascades, and for his valor he was commended in general orders.

Above Vancouver, Rooster rock and Cape Horn—one a remarkable basaltic column, the other a high, long, terraced palisade of the same brownish-black material—draw the traveler's attention. They are almost opposite each other on either side of the river. The rock is one of the finest examples of its kind to be found anywhere, and is noteworthy from whatever point it is viewed.

The Horn rises sheer from the water on an altitude of 500 ft.; then comes a terrace, and then another rise to a height, above water, of 2,000 ft. At the proper season cascades come tumbling down the precipice. The steamers plow along close to the rock, so that one obtains a good view of it.

Between Rooster rock and Cascade locks there are, on the Oregon side, a series of most lovely and extraordinary waterfalls dropping daintily from the cliffs, hundreds of feet

to the level of the Columbia. These falls are of a decidedly unusual pattern, which makes them more attractive. They are narrow, somewhat hidden in the clefts of the rocks, and seem to float or flutter down more like long streamers of lace than in the conventional manner of waterfalls. They are, as seen from the steamers, swaying threads of spray, each, however, having its own individuality.

The most striking and best known of these is Multnomah fall, reliably stated to be more than 800 ft. high, although it seems impossible to believe it. It comes down in two graceful flights, its first being much the higher, but the effect is not lessened by this breaking of unity. Of course there is a Bridal Veil, and Latourelle and Horse Tail are others. One of the conspicuous objects on the Washington shore is Castle rock, several hundred feet high. This is the Beacon rock of Lewis and Clark, and the latter is a much more appropriate name for it. Dr. Parker writes of this in 1835, as Pillar rock. Until the summer of 1901 it was never known to have been climbed. At the Cascades will be shown the tremendous abutments of the Natural Bridge of Indian tradition. They rise on either side 2,500 ft., and are magnificent escarpments of rock.

The Cascades themselves are typical of their kind, but, while wonderfully fine, are hardly as interesting as the Dalles above. All travelers have noted the change in the river at this point. From the swift, eddying current comes a transition to a long, dead sweep of water extending for miles above the Cascades.



MULTNOMAH FALL.

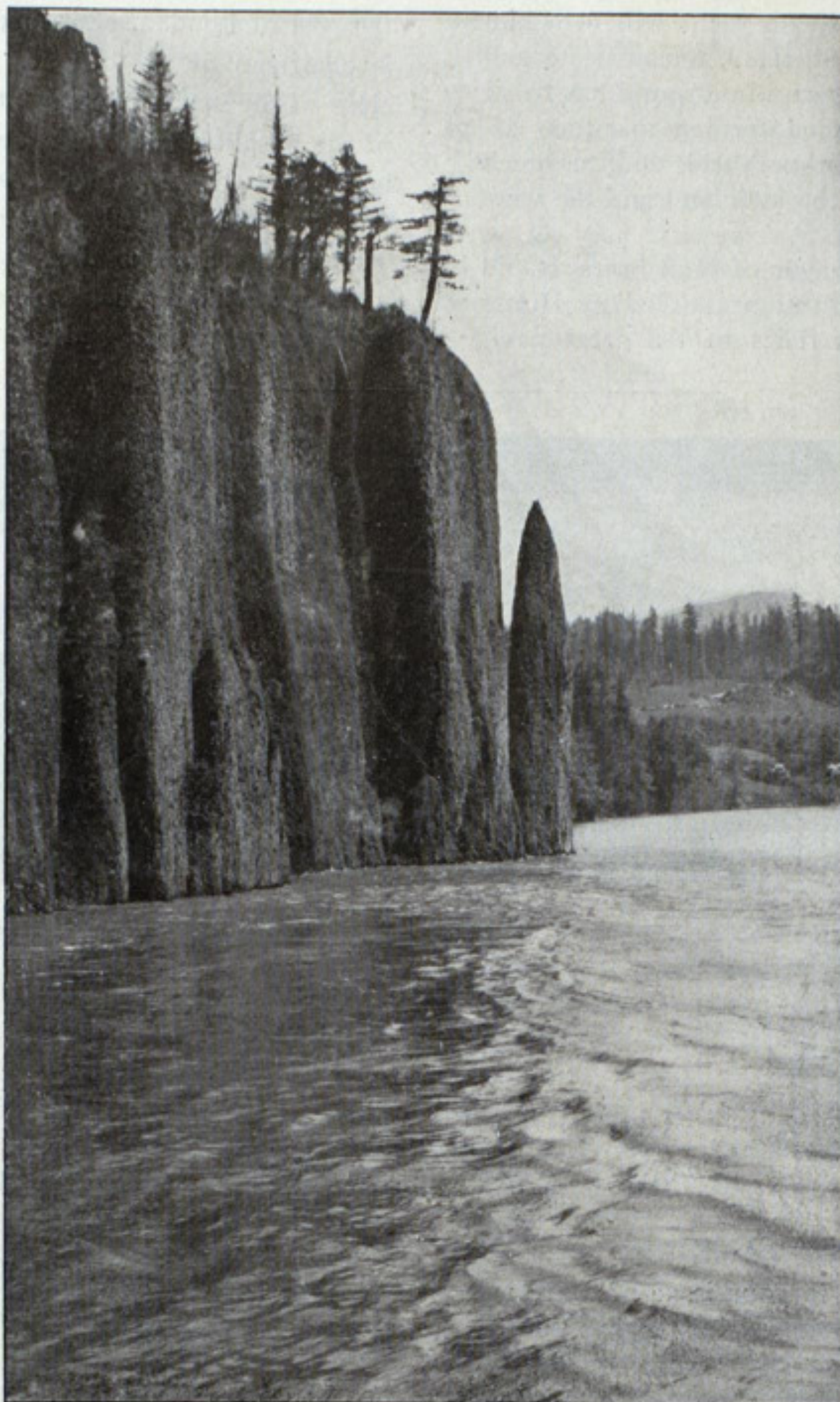
Various geological interpretations have been given for the obstruction formed here, but it has generally been ascribed to landslides. Apparently awful wrenchings have taken place, whole mountain-sides have been ripped, sliced, torn violently from the mother range, and have slid bodily toward and into the stream. It is rare, indeed, that one sees such an instance of it as here. Above the Cascades near Viento the stumps of submerged trees may be seen in the water along the beach and miles of wonderful palisades crown the heights above.

Near the renowned Dalles is Memaloose island, the place of the Indian dead. There are really a number of Memaloose islands around the Dalles and all of them were used as burial places, but the particular Memaloose island is below Dalles City, and is known by a rough stone monument which marks the last resting place of Vic. Trevitt, a white man, who preferred sepulture there to being buried in the white man's burial ground. Bones and skulls are now found scattered over these islands in general disorder.

The Dalles, which lie some miles above the town of the same name, have never failed to excite the wonder of the traveler. They extend for several miles, and the river, compressed into a narrow channel or channels, rushes, boils, seethes through a magnificent flow of basalt, having abrupt, vertical walls. Whirlpools and eddies are innumerable. Lewis and Clark shot these rapids successfully, and the Hudson Bay Co.'s men used often to take chances, but it is dangerous in the extreme and many lives have been lost.

ADMIRALS WHO HAVE NEVER BEEN TO SEA.

England has many efficient and



PALISADES OF THE COLUMBIA.



APPROACHING THE RAPIDS OF THE COLUMBIA.

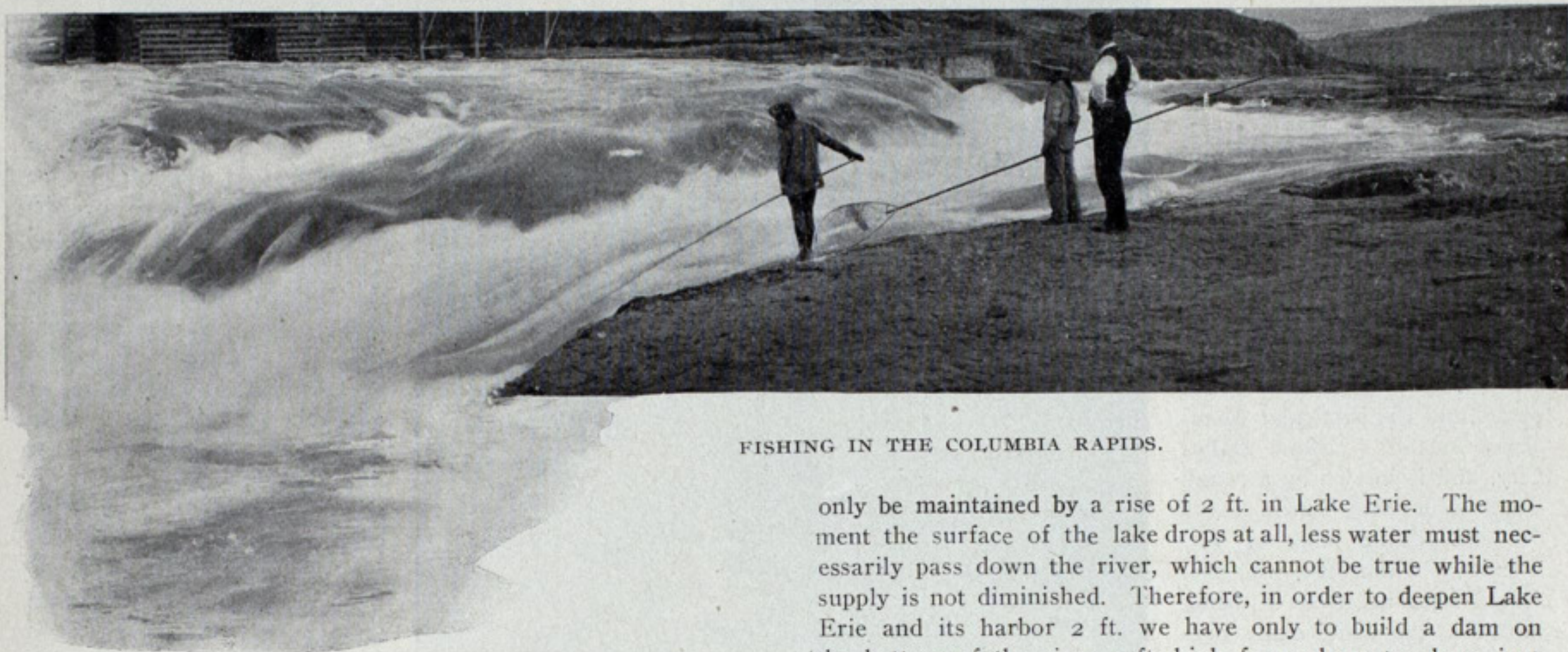
eager sea admirals. Her fleets will never want for men to take command and face the enemy. She has also a few admirals who have never been on the sea, except as passengers for a holiday trip, and whose knowledge of a man-of-war is mainly derived from pictures in the papers. There is the old marquis of Donegal. He is hereditary lord admiral of Lough Neagh. A big-sized lake it is, covering over 150 square miles, and not only the largest in Ireland, but in the United Kingdom. No other lake has an admiral of its own. The duke of Argyll is admiral of the western coast of Scotland and the isles. His grace, who is the king's brother-in-law, is not a sailor, and has no great liking for yachting. Centuries ago the McCallum More, as admiral, kept a pretty tight hand over the western coast line and exacted dues from ships. Skippers of coasting craft were careful not to offend the chief at Inverary castle. Although the new lord provost of Edinburgh is a draper by trade, he is also by virtue of his office lord admiral of the Firth of Forth. In Queen Mary's time the lord provost had control of the Forth, and all movements of warships were regulated through him. He is even yet entitled to an admiral's salute

when he boards a battleship in the estuary. Singularly enough, the present lord provost, who is an enthusiastic volunteer, is both colonel and honorary colonel of his regiment, the Queen's Edinburgh, the latter rank being attached to his office as head of the city. As regards the old seaport of Leith, not only is the provost an admiral of the Forth, but the bailies are entitled to style themselves admirals depute. In the case of Leith, the present chief magistrate, as a ship-owner, is connected with the sea.

Lord Rosebery is an elder brother of Trinity House, and his experience on board his large steam yacht will help him here. The sheriff of Orkney and Shetland, an advocate and K. C., is vice-admiral of these northern islands, and has to sit in judgment over knotty questions concerning maritime affairs. At one time Shetland and Orkney held aloof as much as possible from the jurisdiction of the mainland and the vice-admiral was a notable personage.

As admiral of the Humber, the mayor of Hull bears an old title of honor. It is an ancient institution, the Trinity House at Hull, and the museum contains relics of the great navi-

gator, Capt. Cook. The lord mayor of London is admiral of the port of London. His lordship is three things besides. He is chairman of the Thames Conservancy, coroner escheater, clerk of the markets, chief butler at coronation banquets, head of the hospitals and trusts, etc. There is no port admiral who holds so many high offices, and his salary of £10,000 exceeds that of other admirals. In older days the lord mayor had a magnificent barge on the Thames, and when he proceeded on a voyage with his flag hoisted, all craft, foreign or English, naval or mercantile, had to salute.



FISHING IN THE COLUMBIA RAPIDS.

RAISING THE LEVEL OF LAKE ERIE.

Editor Marine Review: I notice in your issue of March 24 that a delegation of gentlemen interested in meeting the demands and furthering the developments of transportation covering the great lakes system is today before the river and harbor committee of the house of representatives urging the importance of an appropriation of money sufficient to construct a ship canal practically from the lower end of Buffalo harbor down past the shoal water at the head of the Niagara river, and terminating at a point where the Niagara river again assumes a depth sufficient for free navigation and below where the current would interfere with shipping. The necessity for such an improvement will no doubt be clearly and ably advocated. Should such a canal be constructed, the long-talked-of raising the lake level by the damming process at this point would be very much simplified, as such a system of raising the lake level could not well be accomplished without first providing some means of taking care of the commerce past this point, and the canal would provide this necessary means as well as remaining a permanent utility in supplying the link between Lake Erie and the enlarged Erie canal and continuing on to the seaboard, such being the primary and principal object for which the appropriation is sought.

Returning to the consideration of lake levels, I would suggest that perhaps the general impression prevails that to raise the surface of Lake Erie say 2 ft. that it would be necessary to build a dam to some considerable height, while in fact raising the bottom of this river 2 ft. will undoubtedly result in raising the entire surface of the lake 2 ft. To illustrate, suppose the water enters the river flowing in a volume 8 ft. deep and 1,000 ft. wide, and if by any means you raise the bottom of the stream 2 ft. the entire width, you will succeed in carrying the surface of the entire lake 2 ft. higher. The supply to Lake Erie remaining the same, the outflow necessarily remains fixed and such outflow of 8 ft. in depth can

only be maintained by a rise of 2 ft. in Lake Erie. The moment the surface of the lake drops at all, less water must necessarily pass down the river, which cannot be true while the supply is not diminished. Therefore, in order to deepen Lake Erie and its harbor 2 ft. we have only to build a dam on the bottom of the river 2 ft. high from shore to shore just at the point where the surface of Lake Erie perceptibly commences its descent into the Niagara river. If this view of the case is correct, the cost of such an enterprise would not necessitate an extensive outlay of money when considered in connection with the benefits derived.

JAMES STONE.

Cleveland, March 27.

MARINE ENGINEERS VERSUS TUGMEN.

The Marine Engineers' Beneficial Association has sent an order to the chief engineers requesting them to notify their assistants that unless they withdraw from the Licensed Tugmen's Protective Association they will not obtain places this year on freight steamers. The second engineers are in most cases hired by the chief engineers. Therefore, if this order is carried out, the seconds would have to leave the tugmen's association in order to get berths on the freighters. The trouble has come about by the Licensed Tugmen's Protective Association forcing the marine engineers employed on tugs to join the tugmen's association in order to hold their positions upon the tugs. The marine engineers maintain that they are qualified to operate tugs, and have indeed in the past operated the larger ones without membership in the tugmen's association. It was announced some time ago that members of the Marine Engineers' Beneficial Association would accept places on any steamboats that their license entitles them to handle, which, of course, would include harbor tugs.

The tug General of the Great Lakes Towing Co. has been chartered for the season to Hughes Bros. & Bangs, contractors, who have secured the job of extending the east arm of the breakwater at Cleveland.

Tugs have so far been unable to locate the fuel scow Agnes which has been adrift in Lake Erie for the past two months.

COL. SYMONS MAY NOT SERVE ON COMMISSION.

There seems to be some doubt as to whether Col. Thomas W. Symons can serve as a member of the Erie canal advisory commission. Difficulty is being experienced in congress in giving him the necessary relief from his regular duties. A certain element in congress appear to be unwilling to do this, except in such form as would jeopardize Col. Symons' rank and preferment in the military department. Writing to the Marine Review concerning the subject, Col. Symons says:

"Whether or not I can accept the position as a member of the New York state canal advisory board of engineers will depend upon the final action of congress in permitting or not permitting me to act and the terms under which this position is granted. I very much desire to serve on the board far more on account of my dear friends in the state than on any personal account, and have done all I could to procure the requisite authority. The refusal of the military committee of the house of representatives to permit me to aid the state as desired by me came as a great surprise. I hope that between the senate and the house some acceptable measure may be devised and put through. I am most desirous of seeing this great canal work of New York carried through properly and successfully, and wish to aid it in every way I can."

It would seem indeed as though no technical objection ought be permitted to stand in the way of Col. Symons serving on this commission. There is no man in the United States who is better qualified for this work than he is, because there is no man who has given more time to this particular subject than he has. He is the projector of the present undertaking.

OBITUARY.

Capt. William Bolster, one of the oldest and best known captains on the lakes, died last week. Capt. Bolster's home was in Bay City, Mich. The interment took place in Cleveland.

Henry L. Marindin, sixty years old, physical hydrographer connected with the United States coast and geodetic survey since 1863, and a member of the Mississippi river committee, died at his home at Woodside, Maryland, last week of cerebral hemorrhage.

Augustus Cass Canfield, for many years commodore of the Seawanhaka-Corinthian Yacht Club, and also a member of the America's cup committee, died at Aiken, S. C., on March 24. Mr. Canfield designed the schooner yacht Sea Fox, with which he won the Goelet cup, and the sloop yacht Isis, which was also successful.

The death of Capt. A. J. Hall of Rockland, Me., was very sudden. On Thursday of last week he went to the water front to get a glimpse of the ocean and within a couple of hours after his return home he died of heart failure. Capt. Hall was born in St. George in 1831, being the son of Capt. and Clarrissa (Linnekin) Hall. He began to follow the sea at the age of fourteen and made voyages to most of the world's important ports. His first command was the schooner S. C. Loud. Capt. Hall's last vessel was the large schooner Olive Pecker, built for him at Belfast by George A. Gilchrist. Capt. Hall had sailed from Rockland since he was thirty years of age and had retired from the sea about seven years ago.

PERSONAL.

W. M. Leeds, first vice-president of the American Sheet Steel Co., has resigned. This is one of the underlying companies of the United States Steel Corporation.

Mr. Charles F. Glew has been appointed general superintendent of the Crosby Transportation Co., operating the Grand Trunk car ferry system, with headquarters at Grand Haven, Mich.

Mr. Wesley B. Smith, formerly a foreman at Cramp's ship yard, has resigned his position as foreman at the yard of the

Eastern Ship Building Co., New London, Conn., to resume his old position.

Mr. F. Meriam Wheeler, who lately retired from membership in the George F. Blake Mfg. Co. of New York was presented with a gold watch and chain by thirty of his associates. The presentation took place in the directors' room.

Veryl Preston, formerly president of the American Steel Hoop Co. and afterwards vice-president of the United States Steel Corporation, has been elected president of the Eastern Steel Co., Pottsville, Pa., to succeed William A. Donavan.

Commander William Winder, nephew of Admiral Dewey, has been ordered to duty as naval recruiting officer in Boston.

J. B. Dwyer has been appointed traveling agent of the Western Transit Co., with headquarters at 47 Main street, Buffalo, succeeding J. D. Feeley, who has been promoted to the position of agent at Troy.

Mr. George J. Bancroft, Jr., well known throughout the west by his professional work as consulting engineer to the Stratton estate, as well as in other enterprises, has become associated with the Engineering Company of America and will take charge of their department of mine management. His headquarters will be in Denver.

ITEMS OF GENERAL INTEREST.

Evidently things are not altogether harmonious among the members of the American Association of Masters & Pilots. District Captain Charles Maytham, who has charge of the lake harbors, has resigned. The present trouble has come about over differences in the wage schedule and classification adopted by the advisory board and lately presented to vessel owners. The classification of the board was in some instances most peculiar. The Eastern States and the Western States of the Detroit & Buffalo Line, which are the largest passenger boats on the great lakes, were placed in the second class, where, of course, a lower rate of wages obtains. This created great astonishment and dissatisfaction as well among the other lines. Some latitude will be exercised by the Lake Carriers' Association in determining the wage schedule for the passenger lines. There is very little in common between freight and passenger business and it is probable that the passenger schedules will be handled independently.

Order has been received by the collector of Port Bowell from the commissioners of customs at Ottawa that American vessels will no longer be permitted to load at Vancouver or Victoria, Canadian goods destined for Dawson via St. Mitchell and the lower Yukon river route. If Canadian merchandise is to be shipped to Dawson via St. Mitchell it must be transported from Vancouver or Victoria by British bottoms. In other words the Dominion government is applying coastwise laws to this territory.

Advices from Philadelphia are to the effect that the negotiations between the reorganization committee of the Consolidated Lake Superior Co. and the Canadian Improvement Co. for a reorganization of the Lake Superior Co. are off. It is expected now that the work of reorganization will fall upon Speyer & Co., who managed the syndicate which advanced more than \$5,000,000 to the Lake Superior Co. and which holds its assets, bought in at auction, as a pledge.

It is reported that the Seaboard Air Line is preparing for extensive improvements of its property in anticipation of its business to be taken south by the building of the Panama canal. The company is contemplating establishing a line of steamers from Florida to Cuba and points of the West Indies. A survey is being made for an extension from Rutherfordton, N. C., to Peach Orchard, where connection will be made with the Chesapeake & Ohio.

The stockholders of the Eastern Ship Building Co. held their annual meeting in New York last week and re-elected the following officers: President, Charles S. Hanscom; treasurer, Frank H. Swift; secretary, Frank N. Allen.

THE WORLD'S MERCHANT MARINE.

In these days of strenuous commercial rivalry between the leading nations of the world ships are a necessity. In that connection the following summary of the merchant marine of the world in 1903, is of interest at the present, and of profit for the future, as showing what weight in ships the United States has to overcome to meet the demands of its admitted supremacy in exports, and its high position in imports.

The world's merchant marine schedules are:

	No. of vessels.	Tonnage
Sailing vessels, 50 tons and over.....	27,705	8,066,205
Steamers, 100 tons and over.....	13,381	26,158,358
Sailing vessels, less than 50 tons.....	1,131	56,701
Steamers, less than 100 tons.....	3,814	616,209
Grand totals	46,331	34,927,473

Divided into

Total sailing vessels.....	29,136	8,122,906
Total, steamers	17,195	26,804,567

The chief owners of this vast tonnage are:

Sailing vessels 50 tons and over.

	Number	Tonnage
Great Britain	6,539	2,196,443
United States	3,751	1,454,152
Norway	1,740	767,981
Russia	3,006	545,807
France	1,449	535,703
Germany	914	528,267
Italy	1,554	517,964
Sweden	1,575	278,445
Turkey	867	174,824
Japan	1,521	174,624
Greece	911	173,636
Denmark	797	126,135
Holland	704	104,722
Spain	576	94,294

Cuba, Peru, Uruguay, Austria, Argentine, Chile, Portugal, Brazil, Mexico, and Nicaragua, own from 10,000 to 76,000 tons each of sailing tonnage.

It will be noticed that the United States stands second in ownership of the sailing tonnage of the world, and that Norway's total exceeds that of all the other nations from Russia—fourth place—down.

Steamers 100 tons and over:

	Number	Tonnage
Great Britain	5,929	13,966,972
Germany	1,193	2,767,463
United States	846	1,610,466
Norway	844	925,683
Italy	351	714,887
Spain	403	712,804
Holland	304	608,153
Russia	533	593,742
Japan	373	556,036
Austria	224	540,354
Denmark	341	477,087
Sweden	594	473,051
Greece	180	321,330
Belgium	78	153,339
Brazil	186	123,597
Turkey	99	98,066
Argentine Republic	93	73,128
Chile	38	62,742
China	35	54,957
Portugal	26	45,633
Cuba	39	39,439

It will be noticed that the Republic of Brazil now owns nearly three times as much steam tonnage as does her monarchical mother Portugal.

It is also of peculiar interest that Cuba now appears among the world's category of mercantile nations.

In this statement of the world's steam tonnage the United States holds third place, but it is a very poor third, being less than Great Britain's by 5,083 steamers of 12,356,506 tonnage—the present monopolizer of the world's carrying trade. In fact, our steam tonnage is only one-seventh as large as Great Britain's, in either vessels or tonnage capacity.

Recapitulating for emphasis, the comparison, in vessels of both kinds and tonnage, between Great Britain, Germany and the United States is as follows, according to a timely report of the department of commerce and labor:

	Number	Tonnage
Great Britain	5,929	13,966,972
Germany	1,193	2,767,463
United States	846	1,610,466

Sailing vessels.

Great Britain	6,539	2,196,443
United States	3,751	1,454,152
Germany	914	528,267

It is with this triumvirate of progressive nations that the control of the world's shipping, and thereby of the world's commerce lies. In this triumvirate the United States already holds a strong place, and seems destined, with its Isthmian canal, to gradually acquire the lead, if congress does its duty towards our shipping interests.

WALTER J. BALLARD.

Schenectady, March 10.

The new steamer Gen. Mifflin, building at the Risdon Iron Works, San Francisco, for the United States quartermaster's department, is 123 ft. over all, 12 ft. 10 in. beam and 9½ ft. deep. She is fitted with nine watertight bulkheads and has a tank capacity of more than 40,000 gallons of fresh water. The water is carried in eight separate tanks, which form part of the hull construction. On the main deck and extending to the fore mast is built an upper deck. This upper deck incloses the engine and boiler spaces and also provides accommodations for troops, and a very commodious cabin for the use of officers. The vessel is equipped with steam windlass, steam steering gear and steam cargo winches. The auxiliary machinery is very complete. All the pumps are independent of the main engine.

Lake Tug for Sale or Charter.

Tug Kate Williams. Length 113 ft., beam 21 ft., S. C. engine 22 and 40x30 in. Fire box boiler 8 x 17 ft. Rates A 1½. Entirely rebuilt in 1901. Good condition. Lake Shore Stone Co., 97 Wisconsin St., Milwaukee, Wis. April 28

Schooner for Sale.

For Sale—Schooner Minnie Slason. 317 gross tons. Rated A 2. For information inquire of Capt. L. Larson, 812 Huron St., Manitowoc, Wis. tf

Steel Castings for Special Purposes.

Our complete facilities enable us to undertake the manufacture of high grade steel castings for almost any purpose. Write us for particulars.

Open Hearth Steel Castings for locomotives, ship-building, electrical, pump and general machinery purposes. Subject to U. S. Government, Lloyd's, Railroad and other specifications.

Rail or Water Deliveries.

Seaboard Steel Casting Company,
Chester, Pa.

PERTINENT TALK ON MARINE ENGINES.

The Marine Iron Works, Station A, Chicago, recently sent a letter to one of its New York customers which contained so much food for thought that the prospective buyer suggested that it be published. The letter is as follows:

"There is a feature in connection with this marine engine business in the small and medium size work (20 to 500 H. P.) that you will understand, viz: Any concern who for a number of years has devoted their attention exclusively to the work, taking a real interest in it and kept their more or less old patterns as nearly modern as such a procedure would permit; if totally wiped out by fire and all of the patterns destroyed, you can realize that an ideal opportunity is offered for either quitting entirely or starting fresh. If the latter plan is adopted it presents the advantage of incorporating into new patterns all that was best in the old, together with many good features which the old designs would not permit. It was this latter plan that we selected and have been following for the past two years, and although it has been 'hard sledding' at times and at first a tremendous loss to us, it is proving and we believe will continue to prove a positive benefit. Today our line of engine patterns, especially in compounds and triple expansions, is at least 100 per cent better and more complete than those that went up in smoke two years ago. If we could make these facts known to a larger proportion of the intelligent buyers of such machinery, it would be of value to all parties concerned, not excepting the users. You know, in fact everyone familiar with marine machinery within the range of work referred to knows, that no concern in the country could afford to deliberately destroy their old patterns, neither is it possible to make such changes as will always keep them up-to-date, and it requires some real calamity to compel them to make an entire new and complete line. It might seem possible for a newly-organized company to do this, but they could not have had that associated experience so necessary in discussing and deciding upon seemingly minor but really important details of construction."

Launch building this season is being done on an extensive scale on the Pacific coast.

TRADE NOTES.

The Atlantic Works, Inc., Philadelphia, Pa., has recently shipped one of its No. 3 double spindle shaping machines to the Electric Launch Co., Bayonne, N. J.

The Westinghouse Electric & Mfg. Co., Pittsburg, Pa., has just issued two new circulars, one devoted to Type L motors and the other to Westinghouse No. 91 single phase railway motor and car equipment. Large editions of these circulars have been printed and copies can be had upon request. From the printer's standpoint the circulars, as usual, leave nothing to be desired.

The Falls Hollow Staybolt Co., Cuyahoga Falls, report that they recently received some good orders for double refined charcoal iron hollow staybolt bars from Japan, through their agents, Frazer & Co. and the China & Japan Trading Co. Their trade with the railway companies and marine boiler manufacturers, and also with the government of Japan, is rapidly increasing.

A few figures as to the enlargement of the British navy have been recently given out. By the end of March six new battleships, nine armored cruisers, one second-class cruiser, three submarine boats, eleven destroyers and eight torpedo boats will be completed. There are now under construction eight first-class battleships, thirteen armored cruisers, five second and third-class cruisers, eleven submarines and twenty-three destroyers. During 1904-5 will be constructed two battleships, four first-class armored cruisers, ten submarines and fourteen destroyers. The fighting sea force has been augmented by purchasing from Chili her two best warships. The total estimate of the cost of the navy for the current year is \$184,445,000, an increase of \$12,160,000 over last year.

STEAMER FOR SALE.

To close an estate. Package freight steamer, canal size, 2,200 tons capacity. Complete electric plant. Rates \$1½. Cheap or cash. Address Executor, care Marine Review 39-41 Wade Bldg., Cleveland, O. Mar. 31.

Steam Yacht For Sale.

Steam Yacht "Huntress," built in 1880, now in first class repair; \$1,000 repairs to hull last fall. Carries 210 passengers. Will make 11 miles an hour all day; economical to run. Cost \$18,000. Cash price asked, \$6,000. Write for particulars C. S. Cadwallader, Secretary Smith, Davis & Co., Buffalo, N. Y.

Apr. 14

Steamer For Sale Cheap.

Wooden steamer Continental Length, 244 ft; capacity, 2,000 gross tons ore, 2,000 net tons coal. For further particulars apply to M. A. Hanna & Co., Cleveland, O.

Apr. 7

Yacht for Sale.

New beautiful 100-ft. steam yacht, fully equipped. Owner physically unable to use yacht. Will sell for any reasonable offer. Yacht can be seen in Detroit. Address M. J. Steffens, 57 East Twenty-second st., Chicago. tf

Engines Wanted.

Wanted two second hand fore and aft low-pressure engines.

13 and 26 in., stroke 20 in.

12 and 24 in., stroke 16 in.

Address Box 61, Marine Review, 40 Wade Bldg., Cleveland. Apr. 7

Steamer for Sale at Cost—\$13,500.

The old Anchor Line twin-screw steamer Gordon Campbell. Two decks, gangways, hoisting machinery, etc. Suited to carrying coal, lumber, ties, package freight, etc. Spent \$3,500 in repairs this year. Other business requires my undivided attention and I will sell for cost to me. W. F. Carroll, 1011 Ashland block, Chicago. tf

Marine Fire Box Boiler for Sale.

16 ft. long 9 ft. 6 in. diameter; allowed 125 lbs. steam; in good condition. Price reasonable. Address Capt. John Green 402 West Ferry St., Buffalo, N. Y. tf

Hydraulic Slings for Sale.

Hydraulic slings consisting of beam, cylinders, plungers, uprights, hydraulic and feed pumps, engine, etc., capable of raising 300 tons. Address McKinnon Mfg. Co., Bay City, Mich. tf

Tug for Sale.

Tug Frank Canfield, 75 ft. long. Engine 18 x 20, boiler 6½ x 13. Address Canfield Tug Line, Manistee, Mich. Apr. 28

For Sale.

Tug Duncan City. Address, Geo. Pankrantz, Lumber Co., Sturgeon Bay, Wis. tf

Gasoline Launch for Sale.

Length 25 ft 6 in., beam 6 ft. Stationary roof and side curtains. 7½ H. P. Speed about 10 miles. In first class condition; almost new. Apply to Capt. John Green, 402 W. Ferry St., Buffalo, N. Y. tf

Steamers for Sale.

Steamers Russell Sage and John C. Gault, with complete fit-out for package freight, electric light plant, etc. Will carry 40,000 bushels wheat, or 1,200 tons package freight on draft of 14 ft. Both vessels can be seen at Toledo, O. For further information apply to A. W. Colton, Toledo, O. Mar. 31

Passenger Steamer Wanted.

Passenger steamer to carry 700 or more passengers from Milwaukee to Whitefish Bay Resort, Wisconsin. Exclusive landing rights given for pier. Address H. Konopka, Whitefish Bay, Wis. Apr. 14

Patent for Sale.

For sale—The patent of a high-speed propelling device for steam boats. It proves a very good thing. Address C. E. Hansen, 71 Ellen St., Chicago, Ill. Mar. 31

**LUCK
WITH
EACH
CAN
BERTRAM'S
POLISH**

**For TWENTY Years the
Standard of Excellence.**

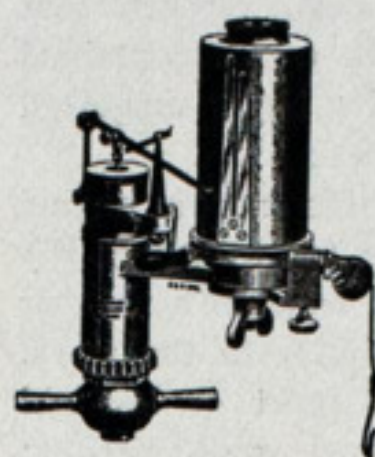
Can be brightened next day by merely rubbing with DRY CLOTH. Every can contains lucky coin. Will bring LUCK IN EACH RACE.

Used on all CUP DEFENDERS

THE MARINE POLISH OF THE WORLD. AGENTS WANTED IN ALL LARGE CITIES.

A Sample of Bertram's Oil Polish mailed FREE OF CHARGE on request.

BERTRAM'S OIL POLISH CO.,
BOSTON, MASS.



SEND AT
ONCE FOR
CATALOG

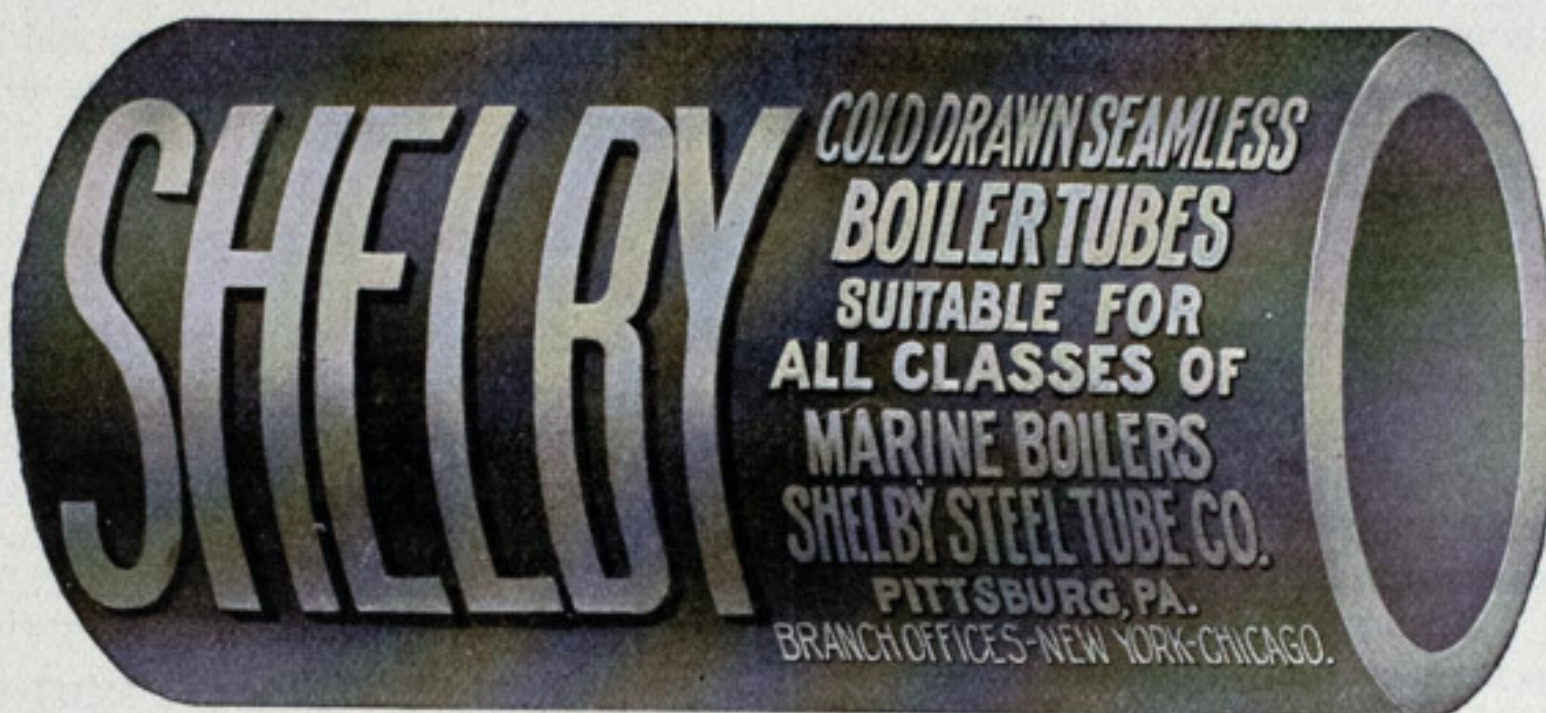
AMERICAN

**THOMPSON IMPROVED INDICA-
TOR with NEW DETENT MOTION.**

**DO NOT let this IMPROVEMENT
ESCAPE YOUR ATTENTION.**

INDICATORS THAT INDICATE
GAUGES THAT GAUGE
POPS THAT POP

AMERICAN STEAM GAUGE & VALVE MFG. CO.
NEW YORK. BOSTON. CHICAGO.



IN A RECENT TEST

MADE BY UNCLE SAM,

*where both Foreign and Domestic
Anchors were considered, the . . .*

**Baldt Stockless Anchor
was the only one approved**

For Catalogue and particulars address

The Baldt Anchor Co., Chester, Pa.

AIDS TO NAVIGATION

are of vital importance to vessel interests.

SCHERZER ROLLING LIFT BRIDGES

aid navigation and meet with the approval of all vessel interests, because of the wide and unobstructed channel provided for navigation, enabling vessels to pass easily and rapidly through the draw.

The SCHERZER ROLLING LIFT BRIDGE Co.,

Main Offices: 1616 Monadnock Block,
CHICAGO, U. S. A.

LATEST PATENT ANCHOR

THE NATIONAL

APPROVED BY LLOYDS.

Manufactured by

L. M. BOWERS & CO.,

Binghamton, N. Y.

Catalogue on Application.

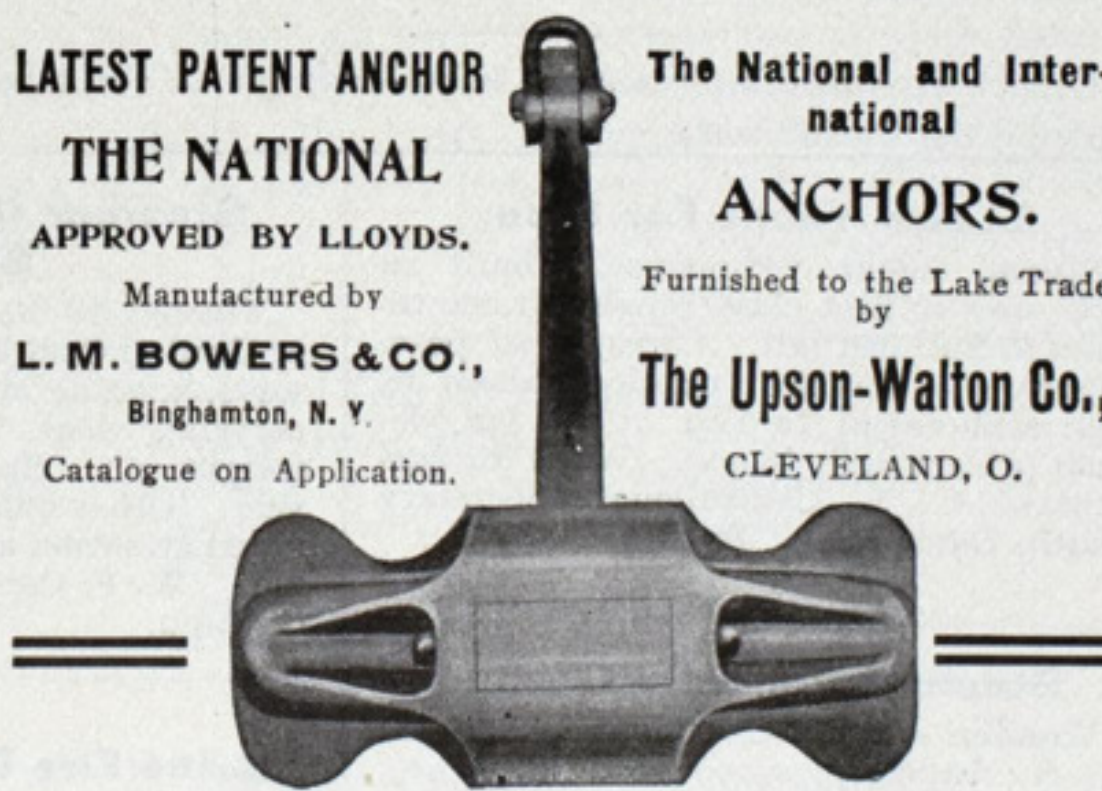
The National and Inter-
national

ANCHORS.

Furnished to the Lake Trade
by

The Upson-Walton Co.,

CLEVELAND, O.



**Search Lights
and Projectors.**

From 8 in. to 30 in. Diam.

ANY METAL

For RIVER, LAKE and OCEAN Service.

CHAS. J. BOGUE,

223 Center Street - - NEW YORK

Write for Bulletin No. 2.

Books on Naval Architecture, Ship Yard Practice, Seamanship, Etc.

AMERICAN PRACTICAL NAVIGATOR—Nathaniel Bowditch. 1903 edition	\$2 25	NAVIGATION SIMPLIFIED—C. E. McArthur. Containing all problems required for U. S. Local Inspector's Examination of Masters and Mates of seagoing vessels	\$1 00
DATA BOOK—Naval architects and engineers' data book. By T. H. Watson. A reliable and simple means of recording valuable data, etc., of vessels and engines. Size of book, 8¾ in. by 5 in., cloth	1 50	POCKET BOOK OF MARINE ENGINEERING, RULES AND TABLES—Seaton and Rounthwaite. For marine engineers, naval architects, superintendents and others engaged in construction of marine machinery	3 00
ELECTROMAGNETIC PHENOMENA AND THE DEVIATIONS OF THE COMPASS—Com. T. A. Lyons	6 00	PRACTICAL COMPASS ADJUSTMENT on Iron, Composite and Wooden Vessels. Illustrated.—Capt. W. J. Smith	2 00
ELEMENTARY SEAMANSHIP—By Barker. New and enlarged edition	2 50	PRACTICAL INFORMATION ON THE DEVIATION OF THE COMPASS, for the use of Masters and Mates of Iron Ships—J. T. Towson	2 00
ELEMENTS OF NAVIGATION—Henderson	1 00	PRACTICAL SEAMANSHIP FOR USE IN THE MERCHANT SERVICE: Including all ordinary subjects; also Steam Seamanship. Wreck Lifting, Avoiding Collision, Wire Splicing, Displacement and everything necessary to be known by seamen of the present day. Second edition, illustrated.—John Todd and W. B. Whall	8 40
HAND BOOK OF ADMIRALTY LAW—Robt. M. Hughes....	3 75	RESISTANCE AND PROPULSION OF SHIPS—Durand.....	5 00
HINTS ON LEGAL DUTIES OF SHIPMASTERS—B. W. Ginsburg	1 75	SELF-INSTRUCTOR IN NAVIGATION AND PRACTICAL GUIDE to the examinations of the U. S. Government Inspectors for masters and mates of ocean-going steamships and sailing vessels—Capt. W. J. Smith. Second edition, revised and enlarged. Cloth bound	2 00
HOW TO BUILD A LAUNCH FROM PLANS—, with general instructions for the care and running of gas engines. Chas. G. Davis	1 50	SELF-INSTRUCTION IN THE PRACTICE AND THEORY OF NAVIGATION—Earl of Dunraven. Two volumes.....	7 00
ILLUSTRATED NAUTICAL ENCYCLOPEDIA—Howard Patterson	3 00	SHIP BUILDING—Tables for constructing ship's lines. Second edition. Archibald Hogg	2 00
INTERNATIONAL SIGNAL CODE—Bureau of Navigation. New edition	3 00	SIMPLE ELEMENTS OF NAVIGATION—Young. New second edition	2 00
KNOW YOUR OWN SHIP—Thos. Walton	2 50	SMALL YACHT CONSTRUCTION AND RIGGING—Linton Hope	3 00
MANUAL OF ALGEBRA—R. C. Buck. For the use, more especially, of young sailors and officers in the merchant navy; numerous examples and exercises	1 50	STABILITY OF SHIPS—Sir E. J. Reed	8 40
MARINE INSURANCE—W. Gow	1 50	STEEL SHIPS: Their Construction and Maintenance. A manual for ship builders, ship superintendents, students and marine engineers—Thos. Walton	5 50
MARINER'S COMPASS IN AN IRON SHIP: How to keep it efficient and use it intelligently—J. W. Dixon.....	1 00	TEXT BOOK OF NAVAL ARCHITECTURE—J. J. Welch	1 50
MODEL ENGINES AND SMALL BOATS—N. M. Hopkins. New methods of engine and boiler making; ship design and construction; fifty illustrations	1 25	TEXT BOOK OF SEAMANSHIP—Com. S. B. Luce. U. S. N. Equipping and handling of vessels under sail or steam....	10 00
MODERN SEAMANSHIP—Lieut. Com. Austin M. Knight, U. S. N. Adopted as the text book of the United States Naval Academy	6 00	THEORETICAL NAVAL ARCHITECTURE: A treatise on the calculation involved in naval design—Samuel J. P. Thearle. In two volumes	3 50
MODERN PRACTICE OF SHIP BUILDING IN IRON AND STEEL—Samuel J. P. Thearle. Two volumes. Second edition, revised and enlarged	5 25	THEORETICAL NAVAL ARCHITECTURE—E. L. Attwood. Text book; 114 diagrams	2 50
NAVAL ARCHITECTURE: A treatise on laying off and building wood, iron and composite ships.—Samuel J. P. Thearle. In two volumes	3 00	"WRINKLES" IN PRACTICAL NAVIGATION. Ninth edition, revised. S. T. S. Lecky	8 40
NAVAL ARCHITECTURE: A manual on laying off iron and steel vessels—Thos. H. Watson. Valuable for naval architects as well as beginners in ship yards.....	5 00	YACHT ETIQUETTE—Capt. Howard Patterson	1 00
NAVAL ARCHITECTURE—Sir W. H. White. New edition. 750 pages	9 00		
NAVAL ARCHITECTS AND SHIPBUILDERS' POCKET BOOK—Clement Mackrow. Formulae, rules and tables, and marine engineers' and surveyors' Handy Book of Reference. Eighth edition, revised and enlarged	5 00		

Sent to any address, carriage prepaid, at prices named. There is no book on Navigation, Marine Engineering, Ship Building, or the allied industries, that is not either published or for sale by the

MARINE REVIEW,

39-41 Wade Bldg., CLEVELAND, O.

See page 6 for list of books on Marine Engineering, or the Operation of Engines, and for Beginners in Engine Room.

Neversink Cork Jackets and Life Belt.

Warranted 24 pounds. Buoyancy and full weight of Cork, as required by U. S. Inspectors.

Consolidated Cork Life Preservers. Ring Buoys and Fenders.

SAFEST.**CHEAPEST.**

Approved and adopted by U. S. Board of Supervising Inspectors. Also adopted by the principal Ocean, Lake and River Steamer Lines as the only Reliable Life Preserver. Awarded four Medals by World's Columbian Exposition.



**METALLIC
and
WOODEN
LIFE
BOATS.**



Metallic Life Rafts. Marine Drags.

Manufacturers of Woolsey's Patent Life Buoy—the lightest, cheapest and most compact life raft known.

DAVID KAHNWEILER'S SONS.

437 Pearl Street, New York City.

Send for Illustrated Catalogue.



Phone Call 591A Greenpoint.

LANE & DeGROOT.

METALLIC LIFE BOATS.
(Formerly Raymond's)

Metallic Life Rafts, Cork Life Preservers, etc., approved by the U. S. Supervising Inspectors. Also Wood Boats of every description. Repairing of every kind promptly attended to.

305-315 Vernon Ave., Long Island City, N. Y.

THOS. DREIN & SON,

TATNALL ST. BELOW RAILROAD, WILMINGTON, DEL.



**BUILDERS OF METALLIC LIFE
BOATS AND RAFTS, YACHTS
AND PLEASURE BOATS.**

LIFE PRESERVERS.

**OUTFIT FOR LAKE STEAMERS
A SPECIALTY.**

"FOREST CITY" MARINE PAINT

A Paint Made Expressly for This Purpose
The Forest City Paint & Varnish Co.,
CLEVELAND, OHIO.

British Admiralty Charts

The latest Editions of Charts, Plans and Sailing Directions Published by the British Admiralty.

Can be obtained from Admiralty Agent by Appointment.

J. D. POTTER,

145 MINORIES, LONDON, ENGLAND.

OFFICIAL CATALOGUE OF CHARTS (380 pages) 1s.

An Abridged Catalogue of Charts of Nautical Books (free on application.)

PHOSPHOR BRONZE.

REG. TRADE MARKS



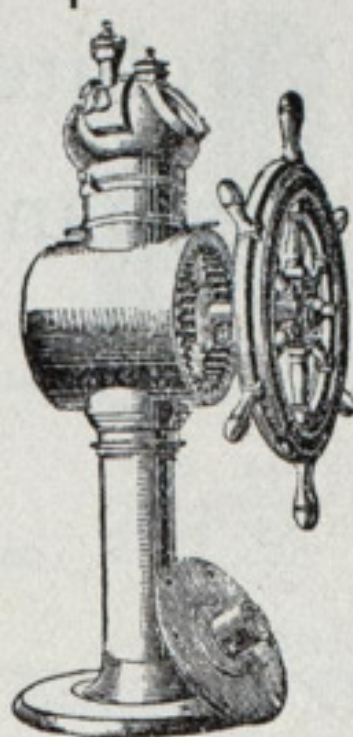
THE PHOSPHOR BRONZE SMELTING CO. LIMITED,
2200 WASHINGTON AVE., PHILADELPHIA.

"ELEPHANT BRAND PHOSPHOR-BRONZE"
INGOTS, CASTINGS, WIRE RODS, SHEETS, ETC.

— DELTA METAL —

CASTINGS, STAMPINGS AND FORGINGS.
ORIGINAL AND SOLE MAKERS IN THE U. S.

DELTA METAL

**Marine Manfg. & Supply Co.,**

157 and 158 South St.,
New York.

Ship Fittings and Supplies,
Capstans, Windlasses, Steering
Apparatus, Engine Room Tele-
graphs, Brass Air Ports,
Dead Lights, Pumps, etc.

Catalogue A—Air Ports, Ventilators, etc.
Catalogue B—Windlasses, Pumps, etc.
Catalogue C—Steering Apparatus.
Others in course of preparation

• • Buffalo • •
Wrought Steel Ranges
Are the Best.

Steamboat and Barge Ranges with Rotary Grates.

No Cog Wheels to Warp or get out of order.

Don't take our word for it but ask some one using them.

Russell & Watson,

General Steamboat Work

BUFFALO, N. Y.

Send for Catalogue.

AGENTS—Topky Bros., Ashtabula Harbor, Ohio.

H. C. Weber & Co., Detroit, Mich.

John Black, So. Chicago, Ill.

Pritzlaff Bros., Milwaukee, Wis.

FAHEY & CO.

Bankers & Brokers.

TELEPHONE, MAIN 2754.

CLEVELAND, O.

1011-1015 THE WILLIAMSON BLDG.

EVERY POSSIBLE FACILITY FOR CONDUCTING A BROKERAGE
BUSINESS IN STOCKS, BONDS, GRAIN, ETC.

A TRUSCOTT BOAT.

SIMPLE. SAFE. SPEEDY. RELIABLE.

It may be possible to build better and safer boats but it hasn't been done yet. We send a completely illustrated catalogue and price list free, which tells you all about boats and why Truscott Boats Excel.

TRUSCOTT BOAT MFG. CO.

ST. JOSEPH,
MICH.

DON'T BUY A GASOLINE MARINE ENGINE until you have investigated "THE WIZARD."

CAPACITY, THREE TO SIX HORSE POWER. WEIGHT, 225 LBS. NO VIBRATION. PERFECT CONTROL. MARVELOUS SIMPLICITY OF CONSTRUCTION. RECORD BREAKING ECONOMY. HIGH-GRADE IN EVERY RESPECT. CAN BE USED ALSO FOR ELECTRIC LIGHTING AND GENERAL WORK WHEN NOT IN BOAT.

Manufactured by **THE TEMPLE PUMP CO., CHICAGO, ILL., U. S. A.**

Established 51 years.

The Wm. Cramp & Sons Ship and Engine Building Co.

PHILADELPHIA, PA.

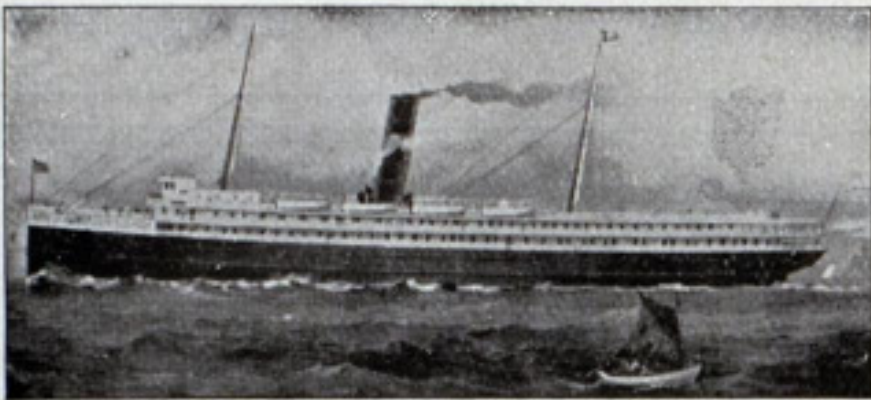
BRASS FOUNDRY

PARSONS
MANGANESE BRONZE

PARSONS
WHITE BRASS

Propeller Castings of all kinds a specialty.
Castings and Ingots for marine and land purposes
of high tensile strength and best composition.

ROACH'S SHIP YARD.



Delaware
River Iron
Ship-Build-
& En-
gine Works
Chester, Pa.

Builders of Steamships and Marine Machinery.

SHIP-BUILDING IN ALL ITS BRANCHES.

NEW YORK OFFICE, MORGAN IRON WORKS Foot E. Ninth St.

Fore River Ship and Engine Co. Successors to
Steel Ship and Marine Engine Builders.

CONTRACTORS FOR

U. S. Torpedo Boat Destroyers Lawrence and Macdonough.
U. S. Protected Cruiser Des Moines.
U. S. Battleships New Jersey and Rhode Island.
U. S. Steam Light-Vessel No. 72.

OFFICE AND WORKS, QUINCY, MASS. U. S. A.

The Atlantic Works, Builders of Steamships,
.... of Steam Yachts,
Tow Boats Etc
EAST BOSTON MASS.

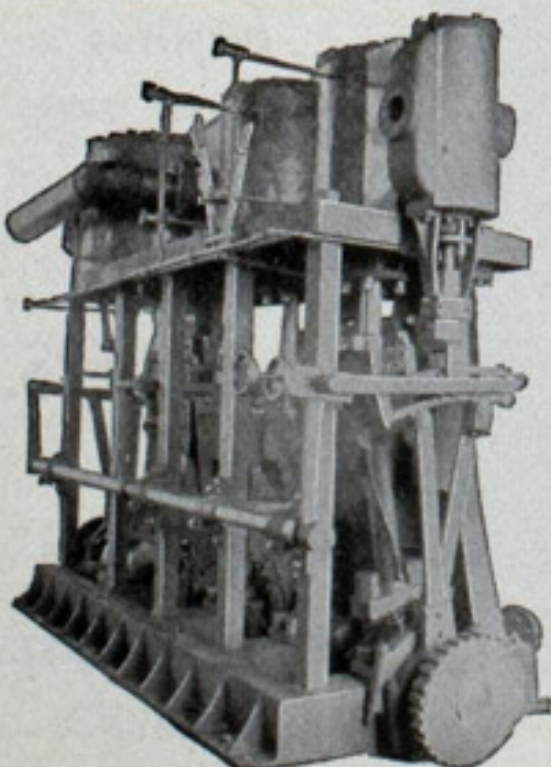
Marine Engines, Boilers and Tanks.
Heavy Machinery and Plate Iron Work
Three Marine Railways.

Risdon Iron Works

Build STEEL AND IRON SHIPS

MARINE WATERTUBE BOILERS, ENGINES

Works—Potrero. Office—Steuart & Folsom Sts.
SAN FRANCISCO, CAL.



**Chas. P. Willard
& Co.,**

F. C. WALTER, MANAGER,
30 W. Randolph St.,
CHICAGO.

Builders of

Marine Engines and Boilers,
Paddle Wheel Engines,
Boat Machinery,
High Pressure, Compound
and Triple
Expansion Engines,
Yachts and Launches.

Write for Catalogue.

Newport News Shipbuilding AND Dry Dock Co. SHIP and ENGINE BUILDERS.

Equipped with two large basin dry docks of the following dimensions:

	No 1	No 2
Length on top	610 ft	827 ft
Width on top	130 ft	162 ft
Width on bottom	50 ft	80 ft
Draught of water over sill	25 ft	30 ft

Shops are equipped with modern machinery capable of doing the largest work required in ship construction.

Tools driven by electricity and compressed air used in constructing and repairing vessels.

For estimates and further particulars, address

C. B. ORCUTT, President.

No. 1 BROADWAY, NEW YORK.

Works at Newport News, Va. (On Hampton Roads.)

The Allen Dense-Air Ice Machine

Contains no chemicals, only air. Proven by many years' service in the tropics on United States men-of-war, steam yachts and passenger steamers.

A HUNDRED ARE IN DAILY SERVICE ON STEAMERS.

H. B. ROELKER, 41 Maiden Lane, NEW YORK
Consulting and Constructing Engineer. Designer and
Manufacturer of Screw Propellers.

The Shipowners Dry Dock Co. Chicago, Ill.

Building and Repairing of Steel and Wooden Ships with economy
and dispatch.

Yard and Dry Docks: Halstead St. and North Branch.
Largest Dry Dock: 480 ft. on keel blocks.

Office, 381 No. Halstead St. Phone, North 1658.

MANITOWOC DRY DOCK COMPANY

SHIP BUILDERS

Facilities for Repairs to Steel and Wooden Vessels.

MANITOWOC

WIS.

MASTERS AND ENGINEERS ATTENTION!

When in need of Repairs to Engine or Boiler, Call on

THE MARINE IRON CO., Duluth, Minn.

FOR SHOP, FOUNDRY, BLACKSMITH AND BOILER WORK.
SUPPLY BOAT AVAILABLE AT ALL HOURS.

Foot of 12th Ave., on the Duluth Dredge & Dock Co. Dock
Old Phone No. 1270.

Office Phone { Long Distance 423.
Zenith 423.

Residence { Long Distance 719-4.
Zenith 846.

GOGEBIC STEAM BOILER WORKS,

J. F. DACEY, Manager.

Boilers, Tanks and Sheet Iron Work,
Boiler Fronts and Grate Bars.

SPECIAL ATTENTION GIVEN TO REPAIRING.

Office and Works:
409 LAKE AVE. SOUTH.

DULUTH, MINN.

THE LOCKWOOD MANUFACTURING CO.

EAST BOSTON, MASS.

ENGINEERS AND MACHINISTS.

Builders of STEAMSHIPS, TOW BOATS and MARINE ENGINES.
REPAIRING OF HULLS AND MACHINERY.

W. & A. FLETCHER CO.

NORTH RIVER IRON WORKS.

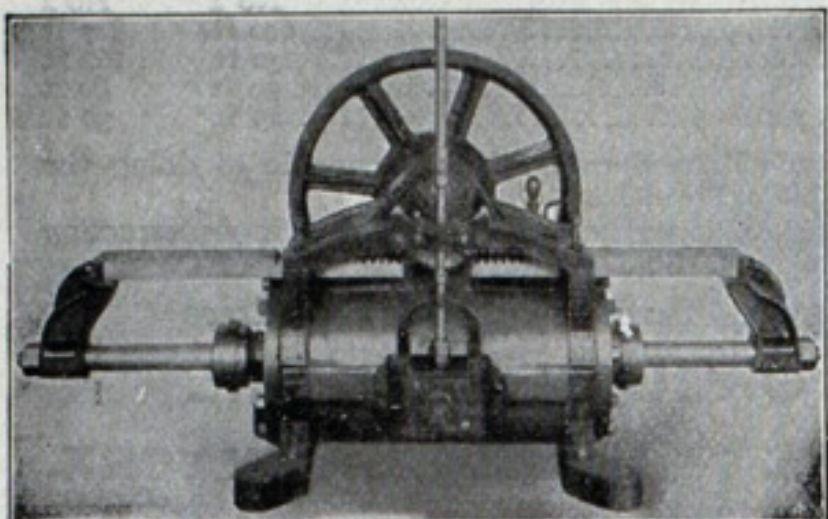
MARINE ENGINES, BOILERS, Etc.

Hudson, 12th and 14th Streets, Hoboken, N. J.

Take Ferry from foot of West 14th St., N. Y.

A STEAM STEERER

DIRECT AND POSITIVE
QUICK ACTING. SPECIALLY ADAPTED



for
Steam Yachts,
Ferryboats,
Lake, Ocean
and
Harbor
Tug Boats.

Send for Catalogue and Particulars

MOULTON STEERING ENGINE CO.

17 State St., NEW YORK CITY.

CRANE VALVES

ESTABLISHED 1855

SMOOTH-ON

TRADE MARK

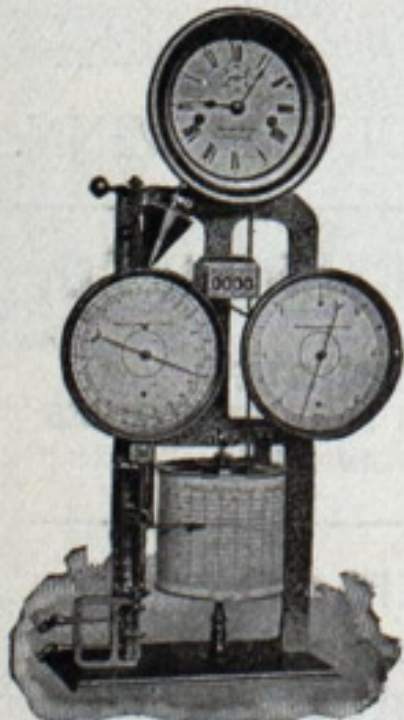
Iron Cement No.1

Unequaled for boiler patching, making flanged joints, stopping leaks in boiler seams, it has saved the use of many boilers, and for foundry use. SMOOTH-ON when mixed with water becomes a hard metallic iron that expands and contracts with the iron, and will withstand fire, steam, water or oil. sold in 5, 10 and 25 pound blue labeled cans. 60 page catalogue, and name of nearest jobber on request.

SMOOTH-ON MANUFACTURING COMPANY

572-574 Communipaw Ave., JERSEY CITY, N. J., U. S. A.

Chicago Office, 61 N. Jefferson Street.



The Nicholson Perfected Ship Log

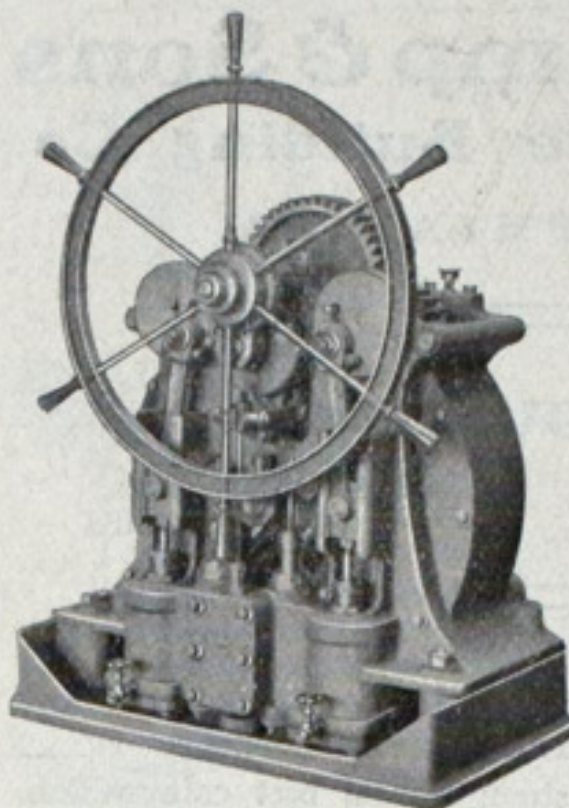
is the only log that accurately shows the speed of the moment of a ship, on a dial, and records this speed on a paper chart for every minute of the trip. It also registers the distance travelled. No line overboard. Placed in chart house or wherever desired.

THE Nicholson Marine Distance Finder.

ADVANTAGES CLAIMED:

The exact distance from any fixed point can readily be determined without any mathematical calculation. Anyone can easily learn to use it.

Nicholson Ship Log Co. 204 Superior St.,
CLEVELAND, O.



BECK STEAM AND HAND STEERING GEAR.

Changed from steam to hand gear instantly. Rudder moved hard over through one or more turns of wheel as desired. Is self-locking. Will cushion any blow on rudder and return to position automatically. All gears are machine cut. Position of Rudder shown by Indicator at all times.

Pawling & Harnischfeger,

Clinton and So. Water Sts., MILWAUKEE, WIS.

COMPASS ADJUSTER

CAPT. J. M. FIELDS

INVENTOR OF AND AGENT FOR

Fields' Patent Course Finder.

40 Wade Bldg.

CLEVELAND, O.

Northwestern Steam Boiler & Mfg. Co.

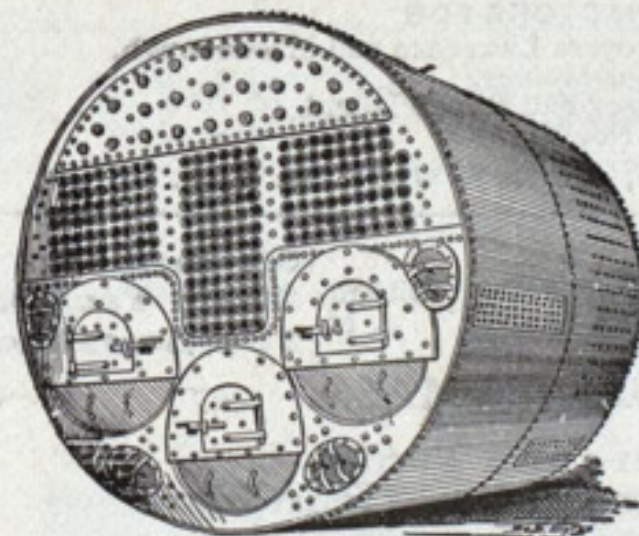
DULUTH, MINN.

MANUFACTURERS OF

Boilers, Engines and
Machinery.

Special facilities
for Marine Work.
Repairs promptly
attended to Night
or Day.

We carry a complete line of Marine and Engineers' Supplies.



TELEPHONES:

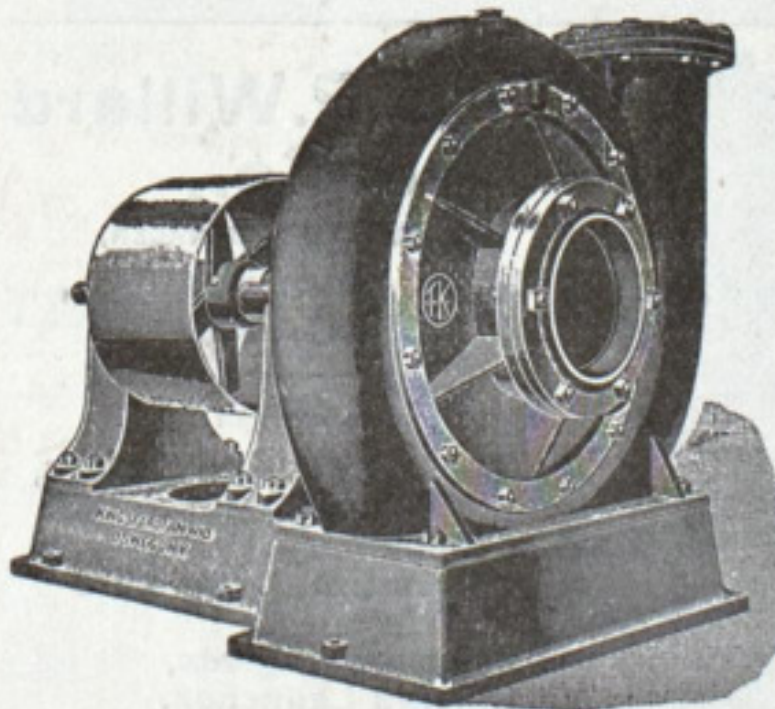
OFFICE AND WORKS, 615.

Residence Calls:

M. A. RYAN, Pres. and Gen'l Mgr., 776 R.

J. H. OPPERMAN, Secretary, 579 R.

E. KRIZ, Superintendent, 557 M.



DREDGING, WRECKING
CIRCULATING
AND BALLAST PUMPS.

MARINE BOILERS.

Kingsford Foundry
& Machine Works,
OSWEGO, N. J.